

THE EDUCATION OF
HANDICAPPED CHILDREN
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IN EDUCATION**

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HYDROCEPHALIC. AGE 19; BINET AGE 7.4 AT AGE OF 17.8;
I.Q. 46

THE EDUCATION OF HANDICAPPED CHILDREN

BY

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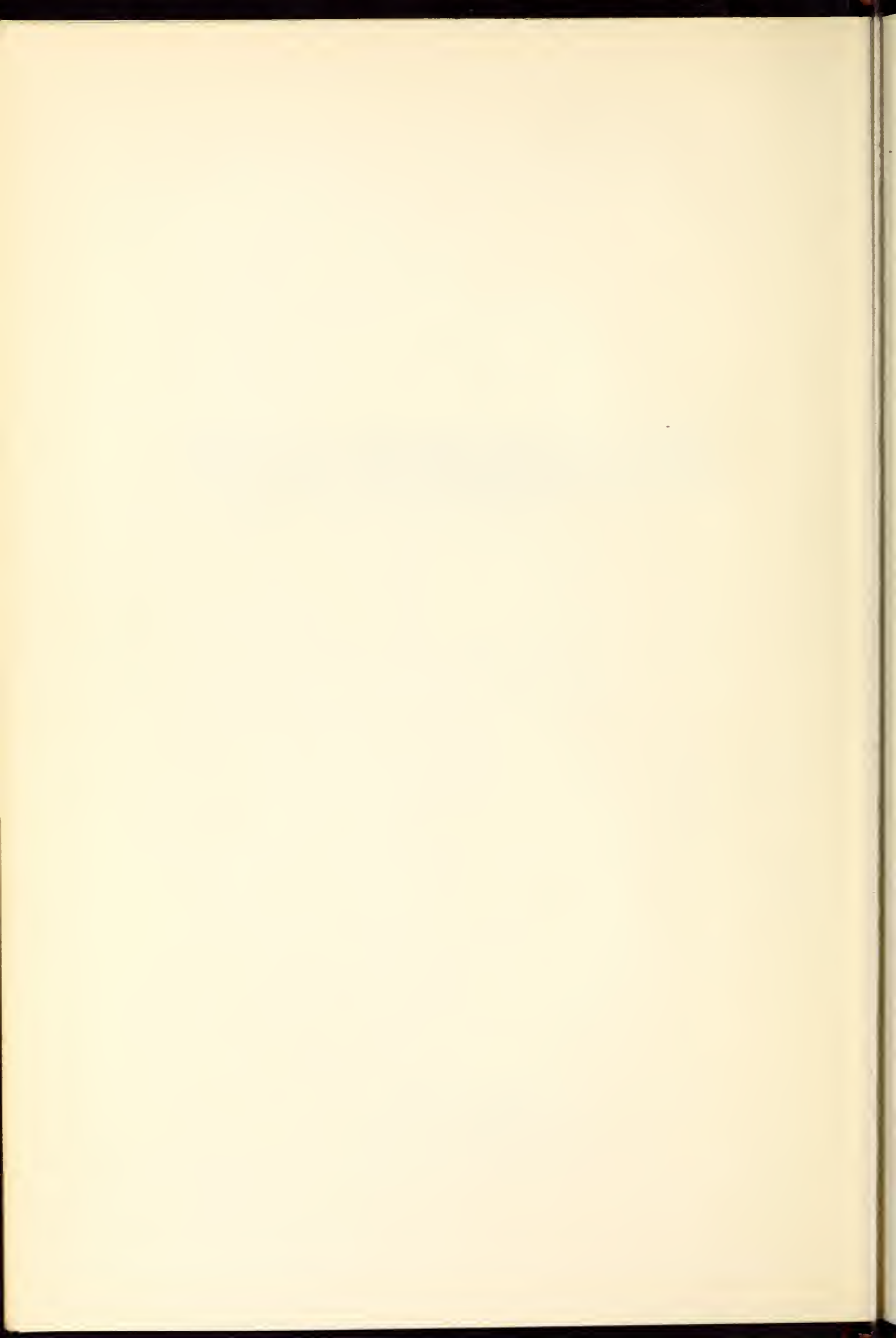
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Dedicated to all those of Normal Endowment who have sought earnestly by first-hand contact, study, and labor to understand and rehabilitate handicapped children.



EDITOR'S INTRODUCTION

DURING the past quarter-century our States have enacted a large amount of compulsory-education and child-welfare legislation, and one of the results of the enforcement of these laws has been to throw a new burden on the public schools. Not only have the truant and the incorrigible been brought into the schools in consequence, but also many children suffering from physical defects and disorders as well as those of low mentality. As a result our schools have experienced great difficulty in handling such children, and an educational problem has been created with which we formerly did not have to deal to any such extent as at present. Another result of such legislation, which has brought into the school children who are crippled, deaf, suffering from speech or visual defects, the mentally deficient, the feeble-minded, the mentally disordered, and the moral delinquent, has been to awaken public expectations which it has been hard for the school to fulfill. The school has been forced to meet the problem as best it could, and out of the study of the needs of such handicapped children it has tried to devise forms of instruction that will enable it to render real service to them.

For children suffering from physical defects, whether remediable or not, much can and is being done by our schools. For all but the lowest grade of mentally deficient children, too, much also can be done. The latter it is possible to educate to a degree, to train and improve them, and to guide them vocationally. While we know that mental deficiency is incurable, in a medical sense, and that by education we cannot make over a mentally deficient child into a normal child, we have found that it is nevertheless possible

to organize and condition his behavior, to train him for certain forms of employment where he can make a reasonable success, to build up an educational program for him that will meet his individual needs, to help establish him in earning service, and to make his life comparatively contented and reasonably safe for society.

The problem for the school, as it relates to these special classes of children, we have found, is one of diagnosis, proper classification, curriculum adjustment, restatement of educational objectives, revision of teaching methods, differentiated instruction, and proper training and habit formation, with a view to the removal, in so far as is possible, of the social menace of those children who enter school life in a handicapped physical or mental condition. In studying the needs of these special classes of children, a flood of light has been thrown as well on our school practices as they relate to the handling of those backward, misbehaved, and maladjusted individuals who often cause our teachers much trouble and the school much loss of time and energy.

A careful analysis of this fundamental educational problem is of much importance to all those charged with the responsibility of the direction of public education, and the editor of this series of textbooks feels that he is fortunate in being able to present, in this volume, the carefully organized results of years of careful clinical study of thousands of handicapped children, as found in a number of our large public-school systems and child-welfare clinics. The author has been able to organize his results so that the volume forms an excellent textbook for use by our schools of education in studying the problem, and also an excellent guide for practical workers in any line of service that deals with the care or training of handicapped children.

ELLWOOD P. CUBBERLEY

PREFACE

THIS text is the outgrowth of a course of lectures delivered year by year in six universities and one college of education since 1912. Although the lectures appear here substantially as delivered during this period, they have been considerably condensed in places and embody revisions made from time to time in keeping with the growth of the science.

Many topics have necessarily been treated briefly, because of the imposed limitations of the scope of the book, or because they will be treated in more detail in a projected companion text based on a parallel series of lectures in clinical psychology and psychopathology, or because the detailed argumentative or experimental evidence on which many of the conclusions are based has already appeared in print, or because certain topics have already been adequately treated by other writers. Moreover, it seems to the author eminently desirable to leave ample opportunity for the instructor to supplement the treatment in the text by his own discussions and reports from the contributions of other writers.

The conclusions which are reached in the book represent the outcome, not only of the writer's study of the literature, but of his own reflections, experiences, and experiments during nearly a decade and a half devoted almost wholly to the clinical examination of many thousands of abnormal children of diverse types in institutions for the epileptic, feeble-minded, and mentally disordered, in two university clinics, and in many public school systems, to the supervision and administration of special classes in the public

schools, and to the training of teachers for such classes. Many of the results of this labor have already appeared in numerous monographs and memoirs. The publication of this book has been intentionally deferred, in order that it might embody the writer's matured convictions and conclusions after years of unremitting study of the problems involved, and after subjecting various theories to crucial test in the field of practical public school administration.

It would be impossible to express adequately the stimulation, enlightenment, and challenge to my own thinking which have been derived from the study of the publications of the recognized psychological, educational, sociological, and medical authorities in the field of mental defects and deficiency. I have perused this teeming literature with a sympathetic mind, although frequently forced to take issue with some of the conclusions reached by my contemporaries. The limitations of an introductory treatise necessarily forbid extensive citations or exhaustive lists of references.

In the selection of topics and the construction of the book the writer has had particularly in mind the needs of special class teachers, school administrators, educationists, and psychologists, but it will probably also be of interest to social workers, sociologists, and neuropsychiatrists. While the discussion is largely concerned with children of inferior mental endowment, a brief outline is given of the basic requirements for the organization of special classes or differentiated training for various other types of handicapped children. The aim has been to make the treatment as simple and non-technical as possible, without sacrificing scientific accuracy. It should be remembered, however, that many conclusions in this field must still be held tentatively: the science of mental defect and inefficiency has a long way to travel yet before it will reach anything approaching finality.

I wish to express my appreciation for suggestions offered by my assistants, Mrs. Jessie Wilson and Miss Janet Holcomb, both of whom read portions of the manuscript, and the latter of whom also assisted in the correction of the galley proofs; and to Dr. Walter Fernald, Superintendent of the Massachusetts School for the Feeble-Minded, for supplying me with the photographs of the defectives shown in Figs. 14 to 19, and for information concerning them.

J. E. W. W.



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**THE EDUCATION OF
HANDICAPPED CHILDREN**

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PART I

**HISTORY OF THE EDUCATION OF HANDICAPPED
CHILDREN, AND THE PSYCHOLOGICAL THEORIES
AND DEFINITIONS OF FEEBLE-MINDEDNESS
AND BACKWARDNESS**



THE EDUCATION OF HANDICAPPED CHILDREN

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CHAPTER I

LAYING THE FOUNDATIONS FOR THE ORGANIZED CARE AND TRAINING OF HANDICAPPED CHILDREN

THIS brief historical sketch will be largely restricted to a summary of the most significant trends in the development of the social care, educational training, and scientific investigation of feeble-minded and backward children. I have treated the subject in greater detail in the references given at the end of the chapter. Roughly, four historical epochs may be distinguished in the progress of the movement.

The ancient period. In general, during ancient times it was considered that the feeble-minded were extra-social and devoid of human rights, because they were too solitary or peculiar (hence called "idiots"), or because they were "demons possessed" who were "accursed of the gods." They were treated with indifference, aversion, contempt, ridicule, or neglect, or were cruelly persecuted and even exterminated, sometimes being abandoned in the mountains to die from starvation or to be devoured by wild animals, and sometimes thrown into the rivers to succumb from drowning. Deliberate neglect or abandonment of idiots was countenanced by the laws of Lycurgus, and practiced by the Spartans from eugenic motives. It has also been practiced by inferior races during more recent times, while some scientists and social workers in enlightened nations

still advocate resort to euthanasia as the most rational method of dealing with the problem of the incurable defective.

But a more tolerant attitude gradually emerged. It is said that imbeciles became objects of diversion and amusement, particularly among the Romans, Seneca's wife keeping a blind imbecile (*fatua*) for this purpose. The statement that a few feeble-minded among the ancients rose to positions of influence, and even wore the royal purple, is probably based on fallacious diagnoses. There is no evidence that Nero, Commodus, Elagabalus, or Caligula — four cases in point — were feeble-minded, although they may have been mentally abnormal, deranged, profligate, morally perverse, or cruelly vindictive.

The Christian era. The care of the feeble-minded, as well as the "demoniac," the physically infirm or afflicted, and the poor was enjoined by Christ, Confucius, Zoroaster, and Mohammed. Under the liberalizing influence of Christianity the mentally defective became objects of commiseration, solicitude, and care. While the Bishop of Myra (the "Saint Nicholas" of that age) set on foot charitable efforts for their care and protection as early as the fourth century, no effort was made to train or educate imbeciles during this period. They were, at best, merely protected, housed, clothed, and fed.

The mediæval ages. The attitude assumed toward imbeciles was quite vacillating during medieval times. These "simpletons," according to belief, were the first court "fools" or jesters, and the buffoons who furnished some of the entertainment in the castles of the rich. Or they were exalted in public estimation to the rank of "heavenly infants," or "infants of the good God" (the French word for cretin means Christian), who were supposed to enjoy the special favor and protection of God, and whose sense-

less jabberings were listened to and regarded as heavenly communications, even by the learned Tycho Brahe, who had a fool for his companion in the astronomical observatory. Houses in which feeble-minded children were born were thought to be divinely blessed. During this period of superstitious reverence, the feeble-minded in Europe were accorded special privileges and allowed to roam unmolested. It is reported that this attitude has persisted to more recent times in parts of Ireland and Brittany, and in Brazil and Turkey. In Brazil, if reports can be accepted, defective children are allowed to roam the highways and byways soliciting alms, and may thus support a whole family, as they are rarely refused. In Turkey they have been given special privileges as weird, sacred beings. Some American Indian tribes allowed these "Children of the Great Spirit" to roam about unharmed. During the reign of Edward II (1307-27) England placed "natural fools" under regal protection, requiring the king to administer their estates in their interest.

But persecution usually follows in the wake of superstition, bigotry, and religious fanaticism. The practice of the ancient cruelties was brought back during the period of the Renaissance and the Reformation. Even Luther and Calvin openly denounced imbeciles as evil spirits, "filled with Satan." They were sometimes scourged in the vain attempt to exorcise the infesting demons. But the practice of cruel inflictions gradually waned with the acceptance of more humane views, and with the organization of efforts looking toward the beneficent protection and institutional care of the feeble-minded. This movement was perhaps first inaugurated in France ¹ by Saint Vincent de Paul (1576-1660) and his "Sisters of Charity" who gathered together in the

¹ According to G. A. Auden the first colony for the feeble-minded was founded in Belgium in the thirteenth century in memory of Saint Dymphna.

Bicêtre (a famous Parisian hospital and asylum, formerly a château) the homeless, the outcast, and the bodily and mentally infirm. But little or no attempt was made during this period scientifically to study their mental condition and needs, or to treat, train, or educate the imbecile class.

While the development of the scientific study of mentally inferior children and of the science and art of differential training adapted to their needs was still some distance in the future, the beginning of this movement can be directly traced to the first attempts made to supply differential training for the deaf, which marks the turning-point between the medieval and modern period.

The modern or scientific period. The pioneers in the field of corrective education were Juan Pablo Bonet (or Bonnet; d. 1629?), a Spaniard, and Jacob Rodrigues Pereire (or Pereira; 1715-80), a Spanish Jew, of Portuguese extraction, who was learned in many sciences, who conducted schools for the deaf in Bordeaux and Paris, and who gave forty years of his life to the education of this class of defectives.

Bonet and Pereire. Bonet¹ originated the manual alphabet for the deaf, published in Madrid in 1620. Pereire, who became interested in the education of the deaf at Bordeaux, where he met a girl who was congenitally deaf, extended Bonet's alphabet into a one-handed dactylology of forty signs (the signs in present use are shown in Fig. 1), utilized pantomimic expression, and, his lasting monument to fame, invented the oral method (lip reading) by means of which many deaf have since been taught to speak and to apprehend spoken words. Pereire devised this method as the result of the theory that touch is the primitive sense, that all special senses are derivative modifications of touch, and, therefore,

¹ It has been asserted that Bonet merely put into practice the theories of Ponce de Leon (1520-84), a Spanish Benedictine monk.

that it should be possible through appropriate training to make touch function vicariously for hearing. The success of this method is now well known. The deaf can be taught

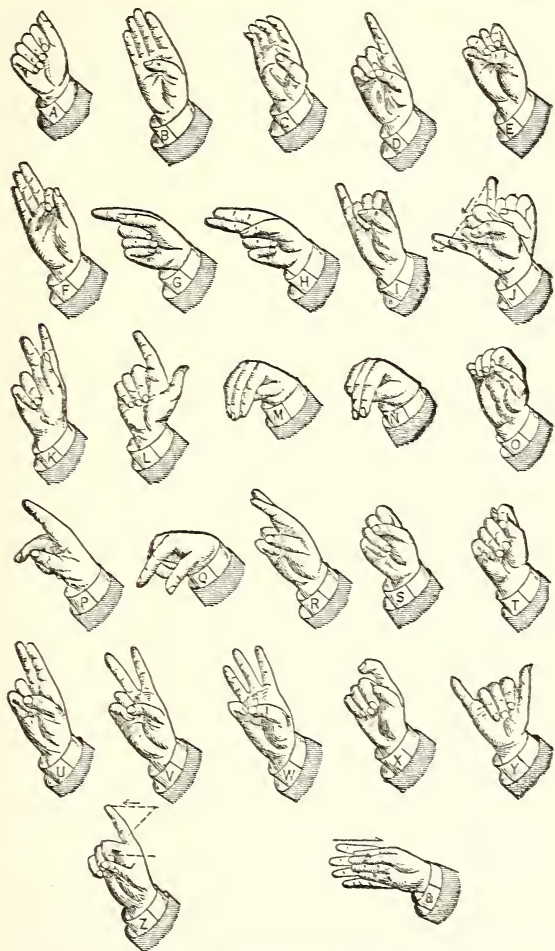


FIG. 1. MANUAL ALPHABET

to understand speech, not chiefly, however, through the tactual apprehension of the vibrations emitted by the voice-producing mechanism, but mainly by the visual apprehension of the movements of the speech organs, and to speak by imitating the movements made in voice production.

Value of Pereire's contribution. Pereire rendered an inestimable service, not only to the deaf, to whom he opened a new world, but also to educational science, and, in recognition of his brilliant achievement, was awarded a pension by Louis XV, while the oral method received the official commendation of a specially appointed committee of the Parisian Academy of Science. There has perhaps been no achievement in the whole realm of remedial pedagogy or educational rehabilitation quite equal to the feat of teaching a deaf child who may never have heard a spoken word and who is even unable to hear his own voice, to speak and apprehend speech. It is much more difficult to reach the deaf than the blind, for the deaf are deprived of the greatest stimulus to mental growth, namely, spoken language. In consequence, the congenitally deaf child enters school like a baby of two or three years, as regards language and sometimes general information, while his blind brother who hears, understands, and is able to use speech, has, by virtue of these advantages, acquired a large fund of information denied the deaf child and may enter on an intellectual equality with his normal playfellows.

Schools for the deaf. The success of Pereire's work encouraged the establishment of other schools for the deaf, and led to the inauguration of educational training for the blind and eventually for the feeble-minded.¹ Schools for

¹ Pereire may have exerted an influence on general educational theory through his neighbor, Rousseau, who visited Pereire's school, and who was one of the first educational writers to advocate the training of the senses of young children. The influence was obviously reciprocal. The practice of

the deaf were opened by Thomas Braidwood in Edinburgh in 1760, by the Abbé de l'Épée (1712-89) in Paris in 1771, whose methods apparently were largely confined to pantomimic signs and finger spellings, and by Samuel Heinike (1729-90) in Germany, who seems to have conducted a pure oralist school. It is alleged that Pereire's contemporaries failed to grasp his method because he tried to keep it a secret, and the oral method languished until the middle of the eighteenth century. It was not transplanted to America until 1867 — a century and a quarter after its inception — perhaps partly because of the controversy regarding the sufficiency of the pure oral method, which is still waged by the pure oralists and the advocates of the "combined method." If reports are correct, the oral method was first introduced here in 1867 by the Clarke Institution in Massachusetts and by a school in New York City. A long time before this, in 1816, Thomas Gallaudet established the first school for the deaf, in Hartford, using the sign alphabet which he had observed in France. Kentucky established the first State school for the deaf in 1823, followed by Ohio, in 1827. Boston is credited with having established the first public day school for oral instruction, in 1869 (named after Horace Mann, a protagonist of the pure oral method, which he had studied in Germany).

Statistics on United States schools. According to Bulletin No. 52, 1923, of the Bureau of Education, all the States except Delaware, Nevada, New Hampshire, New Jersey, and Wyoming maintained State schools for the deaf in 1922. At that time 154 of 160 schools reporting to the Bureau included 61 State or semi-State institutions (15 institutions in 13 States being for both deaf and blind pupils), 74 city day

Pereire probably reflects more or less Rousseau's educational philosophy. The specific details in Rousseau's system were probably derived from the practices observed in Pereire's school.

schools, and 19 private schools. The enrollment in the State schools was 10,738, in the city day schools, 2911, and in the private schools 716, or a total of 14,365. The "current expenses and outlays per pupil" were \$618 in the State schools and \$846 in the private schools. Fourteen of the public school classes, thirteen State institutions, and eleven of seventeen private schools used the oral method exclusively. The others probably used the "combined method" — the oral, the pantomimic, and the manual. The rapid extension of the oral method is partly due to the agitation conducted by various organizations established with a view to securing its exclusive adoption. Some States require by law the use of the oral method.

Most, if not all, of the public school classes and institutions for the deaf admit pupils who are hard of hearing, but not deaf. Little has so far been accomplished in the organization of separate hearing conservation classes for the partially deaf.

The education of the blind. The first school for the blind was established by Valentine Haüy in Paris in 1784, who trained the pupils to read embossed books by the finger, such books being first published in Paris, in 1786. The instruction of the blind began in England in 1791, in Austria in 1804, in Prussia in 1806, in Holland in 1808, in Sweden in 1810, in Denmark in 1811, in Scotland in 1812, in Boston and New York in 1832, and in Philadelphia in 1833. All of the first American schools were private. The first kindergarten for blind children was established in Germany in 1861, and the first school for the colored blind in North Carolina in 1869. The first public school class for the blind in the United States was opened in Chicago in 1900. The welfare of the blind has been greatly furthered in the United States by congressional aid which has been voted the American Printing House for the Blind at Louisville since March,

1879, the aid now amounting to \$50,000 per annum. In addition, the franking privilege is accorded embossed books, which are loaned to the blind by public libraries and institutions.

United States school statistics. In 1922 State schools for the blind were maintained by all of our States except Delaware, Montana, Nevada, New Hampshire, New Jersey, Rhode Island, Vermont, and Wyoming, and the District of Columbia. Montana evidently trains the blind, deaf, and feeble-minded in the same institution. There were forty-eight State institutions, one public institution in Porto Rico, sixteen city day schools, and eight private institutions. The sixty-four schools reporting the data had enrolled 4947 pupils. Adding 655 pupils from nine other schools listed in earlier reports gives a total enrollment of approximately 5600. One hundred and ninety-one city public school systems maintained classes for children with eye handicaps, including classes for the blind and sight-saving classes. The sight-conservation classes for the partially sighted or visually handicapped (who are not blind) represent a comparatively recent educational innovation, the first classes having been established in Roxbury, Massachusetts, in April, 1913, and in Cleveland, Ohio, in the fall of 1913. In 1924 there were about one hundred and eighty such classes in various public school systems. Massachusetts, New York, and Ohio have led the way in the introduction of these classes in this country.

Styles of type. Two styles of embossed type are in use among the blind, the line types and the point types. The Braille, devised in 1825, has survived among three competing systems of point types which have vied for supremacy. The line types are imitations of the letters of the alphabet, the only survivor of which is the large, coarse Moon's type, used by the old and infirm. Since 1919, all books in the

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United States have appeared in the American Revised Braille, grade one and a half, which is a simplification of the British grade two, which contains numerous abbreviations and arbitrary arrangements (see Fig. 2). The sight-saving

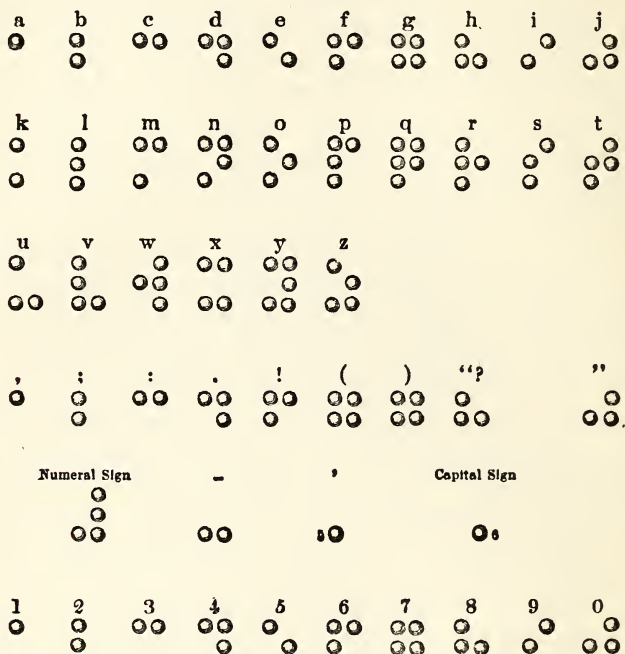


FIG. 2. REVISED BRAILLE GRADE ONE AND A HALF

The six dots of the Braille cell are arranged and numbered thus: $\begin{matrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{matrix}$. The capital sign, dot 6, placed before a letter, makes it a capital. The numeral sign, dots 2, 4, 5, 6, placed before a character, makes it a figure and not a letter. The apostrophe, dot 5, like the other punctuation marks, is formed in the lower part of the cell. It is to be understood that the Braille points are raised.

classes make use of ordinary type in large size, such as the 24-point type in Fig. 3, soft lead pencils, paper with the lines widely spaced, as shown on page 14, and occasionally

individual blackboards which can be placed at optimal distances from the children.

Itard and the education of the feeble-minded. Jean Marc Gaspard Itard (1775–1838), French otologist, physician to an institution for the deaf in Paris, and philosopher, familiar with Periere's educational method and Rousseau's theories, and interested in the solution of the controversy between the empiricists and nativists¹ regarding the origin of ideas, was the first to undertake the systematic training of a low-grade mental defective, the so-called savage of Aveyron, who was the first "wolf boy" to receive educational training.²

Savage of Aveyron. This eleven- or twelve-year-old boy, unclothed and unable to speak, was found in 1798 by hunters in the woods of Caune in the Department of Aveyron, in the southern part of France, roaming the forest in search of acorns and nuts, walking on all fours, drinking water while lying flat on the ground, biting and scratching those who attempted to interfere with him.

Brought to Paris and presented before the Academy of Science, he aroused much interest. Pinel, the distinguished specialist on the mentally disordered at the Bicêtre, pronounced him an idiot and therefore incapable of being taught anything. Itard, on the other hand, who was an empiricist, held that he was merely wild, untaught, and mentally arrested because of social and educational neglect — a case of

¹ According to empiricism (or sensationalism) everything comes from experience or sensations: the mind is a tabula rasa before being acted on by stimuli. According to nativism, ideas are potentially present in the mind, and need only the play of environmental stimuli to make them explicit. Stimuli only develop what is originally present in germinal form. In education the same controversy appears in the antithetical query: Is teaching primarily an instructing or pouring in process, or an educating or drawing out process?

² According to Karl von Linné, ten "wolf boys" were found between 1544 and 1767 living among wolves, bears, wild sheep, and oxen.

To please my poor slave,
I gave him a sketch of my
whole life; I told him where
I was born, and where I
spent my days when a child.

FIG. 3. SAMPLES OF WIDELY SPACED LINES AND TWENTY-FOUR POINT
TYPE USED IN SIGHT-SAVING CLASSES

mental atrophy through disuse, or "idiocy through isolation" — and that he could be greatly improved or restored to normality by exciting his nervous sensibility with varied and energetic stimuli, by supplying his mind with the raw impressions of ideas, by the imitative development of speech, by applying his mind to the satisfaction of his growing physical wants, by arousing new social needs, and by endearing him to social life.¹ Partly because he wanted to demonstrate the truth of this theory and the correctness of empiricism, Itard undertook to lead the boy by gradual steps "from natural life to social life" and "from savagery to civilization." After a year of exceedingly arduous and devoted labor, Itard modified his methods, without having openly acknowledged that his diagnosis had been mistaken, and adopted methods more consonant with the needs of an idiot or low imbecile than a normal savage. After four years of the most systematic and painstaking course of sense training on record (supplemented by attempts to teach reading, writing, and to develop speech, comprehension of spoken language and power to generalize) and of the individual (clinical) study of the educational needs of one child, Itard, in deep disappointment, dismissed his pupil precipitately because, at the onset of puberty, the boy broke out in a "wild storm of passion," and Itard felt that he had failed in his mission.

Itard's contribution. The French Academy of Science, however, recognized that Itard had made a positive contribution to educational science, and commended him for his ingenuity, sagacity, courage, and patience, pointing out that distinct changes had taken place in the boy during his five years of training. He had learned to make relatively fine sensory discriminations, to recognize objects, to identify

¹ Itard is said to have generalized Pereire's touch training and specialized Rousseau's theories in his educational program.

the letters of the alphabet, to read a little (although he understood little that he read), to comprehend the meaning of many words, to apply names to objects and parts of objects, to use adjectives and verbs, to copy words, to write words from memory, to write words expressing his wants (although unable to comprehend written communications), to speak a few syllables, to make some generalizations, and to prefer the food and social life of civilization to isolated existence in the wild. Itard, in fact, had demonstrated that even a low-grade imbecile (the boy was no doubt that or a high-grade idiot) can be improved more or less by appropriate training. Moreover, perhaps Itard enjoys the distinction of being the first educator to apply thoroughly the individual or clinical method to the study and observation of the pupil in the way in which patients are clinically examined in a hospital. The necessity for this method had earlier been pointed out by John Locke (1632-1704), who had emphasized that pupils should be individually diagnosed in school because their minds differ just as their bodies do.

Seguin. Itard's method was modified, systematized, and elaborated by his able pupil and fellow countryman, Edwin Seguin (1812-80), who was also a pupil of Jean Esquirol (1772-1840), who was one of the first physicians to define idiocy as a condition of arrested development and not a disease. Seguin, first a teacher, and then a physician and psychologist, devoted the best forty-two years of his life to the study and training of the feeble-minded, and became, in truth, the inspiring prophet of the best work done since his day for the amelioration of the lot of the feeble-minded. H. Holman rates him as "one of the world's greatest educational investigators and reformers." Seguin entered upon his great work inspired by unbounded faith in the great potentialities of human nature, and imbued with the deter-

mination of devising a system of education, based upon the "principles of physiology," which should embrace "every faculty, function, and aptitude," which would be superior to ordinary book training both for the subnormal and for the normal, and which would eventually lead to the regeneration of mankind.

Seguin's method. Seguin's "physiological education," contained in his great book on *The Moral Treatment, Hygiene, and Education of Idiots and Other Backward Children*, published in 1846 ("the Magna Charta of the emancipation of the imbecile class," which was crowned by the French Academy and commended in an autographed letter by Pope Pius IX for the service its author had rendered humanity¹), is essentially a system of sensori-motor training designed to develop imperfect sense organs both as "faculties and functions," and to refine discriminative sensitivity, which is supplemented by literary, intellectual, moral, and industrial training. Seguin proposed to develop the "imperfect sense-organs" of the defectives by exercising them. He aimed "to lead the child from the education of the muscular system to that of the nervous system and the senses," and "from the education of the senses to general notions, from general notions to abstract thought, from abstract thought to morality." The child, he said, should be trained to move and feel (the training of motility and sensibility), as well as to cognize and moralize. Although employing specially devised didactic apparatus for the formal training of the senses and muscles, each set more or less in isolation, Seguin's view probably was that the sensori-motor and intellectual training should go hand in hand. He asserts that the exercise of a given "function" (probably referring to the physiological activity) should be accompanied by the exercise of

¹ According to one authority the book so honored was the *Theory and Practice of the Education of Idiots* (1842).

the "related faculty" (probably referring to the mental activity), for the "exclusive training of the function" impairs the "faculty," and "the exclusive training of the faculty atrophies the function." The "function of the senses" evolves into and eventuates in "intellectual faculty." The "sensations" become "idealized" by the process of comparison (the "principle of contrast"), which seems to be Seguin's fundamental teaching principle. Moreover, Seguin emphasized that as soon as slight use had been developed in a function it should be elevated to a "capacity," and applied to some useful purpose. He emphasized that the teacher must fail in her function if she does not get beyond the didactic material and formal processes of training and call to the soul of the child. The work of the true teachers of mental defectives, as he conceived, must become a mission, a consecration, a noble passion for the service of one of humanity's most unfortunate classes. It will repay every teacher of mental defectives thoroughly to familiarize herself with Seguin's method by a careful perusal of his *Idiocy: and Its Treatment by the Physiological Method*, published by Teachers College, Columbia University.

After establishing the first successful school expressly instituted for the training of the feeble-minded in Paris in 1837,¹ and directing the reëstablished school at the Bicêtre (1842) for a year, and a private school for a few years, Seguin, at the time of the Revolution in 1848, emigrated to America, where he assisted in the organization of the first American

¹ Earlier short-lived schools had been established at Salzburg, Austria in 1828, by Guggenmoos (established in 1816 and closed in 1835, according to E. P. Cubberley), at Wildberg in 1835 by Haldenwang, both for cretins, at the Bicêtre in 1828 by Ferrus, and again in 1839 by Voisin, at the Salpêtrière in 1831 by Falret, while Voisin opened a private school in 1833. In America, educational training had been given on a small scale to limited numbers of feeble-minded children in the American Asylum for the Deaf and Dumb in Hartford in 1818, and in the Perkins Institute for the Blind in Boston, possibly as early as 1848.

institutions for the feeble-minded. He served for a short time as the superintendent of the "Massachusetts School for Idiotic and Feeble-Minded Youth," at that time located in South Boston, assisted in the organization of the State institution at Syracuse, New York, and was associated for a while in the direction of the "Pennsylvania Training School for Idiotic and Feeble-Minded Children" in Philadelphia, which is now located at Elwyn. He opened a private school in New York City in January, 1880, which is now located in Orange, New Jersey. His work became the model and inspiration of the best subsequent educational work and social care for the feeble-minded undertaken in both publicly and privately supported institutions in America.

France's unique contribution. It is thus apparent that France enjoys the distinction of having originated the modern science of corrective pedagogy. To France we owe the oral method for training the deaf, the embossed type for training the blind to read, the "physiological method" for training the feeble-minded — and more recently the Binet-Simon "method for measuring the development of the intelligence of young children," which has greatly stimulated the establishment of special classes for subnormals.

Guggenbühl and Saegert. Conspicuous among Seguin's contemporaries were Guggenbühl (d. 1865), and M. Saegert. Guggenbühl, the "patron saint" to the cretins, opened a colony for their education and care in 1842 at an elevation of four thousand feet above sea level on the Abendberg, the "Sacred Mount," near Interlaken, in Canton Berne, Switzerland — perhaps the first institution constructed on the cottage plan — which rapidly attained fame and attracted visiting scientists, physicians, kings, and philanthropists from many lands, but which came to an inglorious, untimely end, evidently because of the abuses which had crept into the institution during Guggenbühl's frequent pilgrimages, and

because the reports of the results accomplished had been overdrawn.

Saegert, in Germany, experimented with the method of "physiological education" on a few low-grade mental defectives in the Asylum for Deaf Mutes in Berlin, and in 1842 (or 1845 according to M. W. Barr) founded a private "Institution for the Cure and Education of Idiots," the first school in Germany for the feeble-minded, which attracted many visitors, became an inspiration to workers in Germany and other lands, and according to report, still continues as a department of a hospital for the mentally disordered.

Montessori. The outstanding modern disciple of Itard and Seguin is Maria Montessori, who became interested in the education of the feeble-minded while connected with the psychiatric clinic of the University of Rome and who, in consequence of the conviction reached in 1897 that "mental deficiency presented chiefly a pedagogical rather than mainly a medical problem," made a painstaking study of the works of Itard and Seguin, which she translated into Italian from "beginning to end" in order that she might "have time to weigh the sense of each word" and get "the spirit of the author." The "Montessori system" is, in part, an adaptation of the system of "physiological education" of Itard and Seguin. She freely admits that she got her spiritual key from Seguin. Many of her didactic materials for improving and refining sensory discrimination are largely modifications or refinements of Itard's or Seguin's appliances. She follows her masters in the use of the method of formal sense-training. She includes exercises for practical life, as did Seguin, and became possessed of the "controlling idea," following Seguin, that the method was applicable to normal children from three to seven. But she goes beyond Seguin in actually applying the method to normal children of the masses in the House of Childhood which she organized in

January, 1907, in certain tenements in Rome, and in training teachers (or "directresses") for conducting such schools or houses. She has, moreover, reëmphasized a number of vital educational principles, such as the principles of development — the unfoldment of the child's latent impulses — and of individuality, previously emphasized by Locke, Rousseau, Froebel, and Seguin; the necessity for the individual study of children, particularly the need of observing their spontaneous behavior and interests, foreshadowed by Locke, Itard, and Seguin; and the importance of giving children freedom and liberty of action, emphasized by Rousseau and Froebel, but which, rather paradoxically, they enjoy only to a limited degree when using the Montessori educational apparatus. The system, which has more recently been extended to older children, and which has called forth a mass of laudatory and condemnatory dissertations and reviews, possesses more value for the training of defectives than has been conceded by the captious critic.

CHAPTER II

SUBSEQUENT TRENDS IN CONSTRUCTIVE WORK FOR THE MENTALLY HANDICAPPED

To attempt to trace in detail the growth and development during the last three quarters of a century of the special care and training given all types of handicapped children would be quite impossible within the prescribed limits of this volume. A brief summary will, however, be given of the significant trends in the program of work carried out in the interest of mentally inferior children since the middle of the last century.

1. INSTITUTIONAL AND COLONY CARE FOR THE FEEBLE-MINDED

Through the vigorous propaganda waged in speech and writing by individuals and associations interested in the social, educational, psychological, medical, and eugenic aspects of mental defectiveness, public and private institutions for the care of the feeble-minded have been established in most of the civilized countries of the earth. Only meager reports are available of the post-war developments in Europe. Before the war the most generous institutional accommodations were afforded by Germany, England, Sweden, Denmark, and Switzerland. Brief reference will be made only to the work in Germany and England.

Germany. From 1846 to 1881, Germany established thirty-five training institutions for the feeble-minded (many containing epileptics), some built on very elaborate lines as model institutions. All are under Government control although many are supported by ecclesiastical organiza-

tions. All the teachers must hold licenses from the Government.

England. In England the first school for imbeciles was established by private subvention at Bath in 1846, now conducted as Rock Hall House School by the trustees of the Municipal Charities of Bath, while Park House, the predecessor of Earlswood and of the Eastern Counties Asylum at Colchester, was founded in 1848.

The English Mental Deficiency Act. Through the passage of the Mental Deficiency Act of 1913 (which repealed the Idiot's Act of 1886), England of all countries has perhaps developed the most comprehensive system of guardianship and custody for mental defectives. Workers with mental defectives should be familiar with the main outline of this progressive measure. The Act provides the legal machinery for the mandatory certification, supervision, control, or commitment of all "idiots," "imbeciles," "feeble-minded persons," and "moral imbeciles," who are neglected, abandoned, destitute, cruelly treated, criminal, or inebriate, or who are pauper mothers of illegitimate children; and also all over seven years of age certified by the local education authority as incapable of receiving benefit in the special schools, or who will be in need of supervision and guardianship when leaving the special schools at the age of sixteen. Those under twenty-one who do not belong to the above classes may receive consideration at the instance of parents and guardians. All children certified as mentally defective by the school authorities must be reported to the local authorities under the 1913 Act. The following official agencies are authorized under the Act to deal with mental defectives:

- (1) Board of Control, the central authority which is charged with the general superintendence of the supervision, protection, and control of all defectives, the licensing, regulation, and inspection of institutions and homes established

for their care, and the maintenance of institutions for the dangerous defectives, and their supervision.

(2) Local authorities, consisting of Councils of Counties or County Boroughs, who through committees assist and supervise defectives in need of care who are not of school age (under seven and over sixteen), and who keep a register of all defectives in their area.

(3) Poor Law authorities and the Ministry of Health, which are required to coöperate with the local authorities and to care for the pauper defectives who cannot be otherwise handled.

(4) Education authorities, who under the amended Elementary Education (Defective and Epileptic Children) Act of 1914 are required to establish special classes for mentally defective children (ages seven to sixteen) and enforce their attendance in day or residential schools. In 1918 the Act was amended so as to include physically defective and epileptic children. The education authorities must report the types of defectives noted above to the local authorities.

(5) Voluntary associations, consisting of national and local associations, after-care committees, and institutions supported by associations or individuals. They discharge a great variety of functions.

(6) Guardianship by private individuals. Defectives can be placed under the voluntary or compulsory control of institutions or individuals under prescribed safeguards.

In September, 1921, there were in England two "State institutions" for defectives of dangerous or violent propensities, sixty-seven certified institutions, one hundred and sixteen Poor Law institutions, and about a score each of "certified houses" (private homes for the care of defectives for private profit) and "approved homes" (in which defectives are supported partly or wholly by voluntary contribu-

tions). These institutions had accommodations for over fifteen thousand defectives.

America. The first American residential institution established for the feeble-minded was a private school (as were the first institutions in France, Germany, and England), established by Hervey B. Wilbur at Barre, Massachusetts, in July, 1848, now known as Elm Hill School for the Feeble-minded. Two months earlier the State of Massachusetts had voted the first State appropriation (\$2500 annually for three years) for an "experimental school," which was opened in the Perkins Institute on October 1, 1848, under the direction of Samuel G. Howe, and incorporated in 1850 as the "Massachusetts School for Idiotic and Feeble-Minded Youth" and removed to South Boston. It was permanently located in Waverley in 1891, and is now known as the Massachusetts School for the Feeble-Minded.

New York was the second State to vote an appropriation (July, 1851, \$6000 annually for two years), likewise for an "experimental school," located in Albany in October, 1851 (near the Capitol, as in Massachusetts, so that the legislators could keep a watchful eye on a project regarded with suspicion), and later removed to Syracuse.

A private school was established in Germantown, Pennsylvania, in 1852, which received a legislative appropriation of \$10,000 in 1854, was removed to Philadelphia in 1855, and permanently located in Elwyn in 1859, "dedicated forever to the shelter, instruction, and improvement of God's most afflicted children." The Pennsylvania Training School for Feeble-Minded Children, at Elwyn, is now the largest private or semi-private¹ institution for the feeble-minded in this country.

Ohio opened an institution at Columbus in April, 1857. A

¹ It is privately owned and equipped, but partially maintained by the State.

private institution was opened at Lakeville, Connecticut, in 1858 (or 1857, according to one authority), which was recently taken over by the State and closed when an institution for the feeble-minded and epileptic was established at Mansfield. Kentucky established an institution at Frankfort in 1860, and Illinois at Jacksonville in 1865 (relocated at Lincoln in 1873).

States without institutions. At the present time every State in the Union except Arizona, Nevada, New Mexico, Utah, Arkansas, Alabama, Tennessee, and West Virginia (and the District of Columbia), maintains a separate residential institution for the feeble-minded, but most of the institutions also admit epileptics. Institutions have been authorized, but not yet established, in the last four States named. Montana maintains an institution under one administration with a division for the blind and the deaf and a division for the feeble-minded. The two divisions are located on opposite sides of a river.

New York supports seven institutions (including the institution on Randall's Island supported by New York City, a colony for epileptics, and a reformatory for defective delinquent boys, but not including the division for "defective delinquent" girls at the Bedford Reformatory), Massachusetts supports four (including an institution for epileptics), Pennsylvania, six (including the institution at Elwyn, a small institution for feeble-minded women, a small colony for epileptics, and a building containing feeble-minded inmates at the municipally owned Philadelphia Hospital for Mental Diseases).¹

Some of the State institutions have grown to huge proportions, the largest being those at Columbus, Ohio, with 2726 inmates (985 being in the farm colony at Orient), at Rome,

¹ It is the intention to erect an institution for the feeble-minded on the grounds of this hospital.

New York, with 2640 inmates (including those in the colonies), and at Lincoln, Illinois, with 2021 inmates (including those in the colony).¹

Elaborate institutional organization. Some institutions have been generously equipped and have developed a highly complex network of interrelated departments, divisions, and agencies: a custodial department for the low-grade or infirm; a school department for the trainable children; shops, factories and farms for training and employment; a medical department for examination and treatment; a research department for medical, psychological, and educational examinations and scientific investigations, including field investigations and traveling clinics; a summer school for training teachers of subnormals; the establishment of farm colony annexes to which older adolescents and adults may be sent for profitable employment; and the organization of parole service.

Farm and industrial colonies. Conspicuous among the farm colonies are those connected with the institutions at Waverley, Vineland, Rome, Columbus, and Lincoln. The institution at Rome, New York, began the establishment of its colonies for boys in 1906 and for girls in 1914. In 1923 it had thirty-two small farm and industrial colonies in different sections of the State, nineteen for boys and thirteen for girls. In July, 1923, forty per cent of the total number enrolled in the institution (2684) were in colonies (702), on parole at home (218), or on parole working (172). In 1922, 1400 (690 boys and 710 girls) passed through the colonies, nearly one third of these being paroled or discharged, the number of males discharged being 114 and females 61. The total number of males and females on parole that year was, respectively, 399 and 283. Most of those discharged "made good."

¹ Based on the registration in February, 1923, as supplied by Drs. E. J. Emerick, S. A. Graham, and Charles Bernstein.

The rent paid for the colonies was less than the interest on the money which would have been required to supply equal bed space through new construction of cottages in an institution. Some of the colonies were almost self-supporting.

Institutions for epileptics. Besides New York, Massachusetts, and Pennsylvania, New Jersey, Maryland, Ohio, Kansas, Indiana, Michigan, Iowa, and Texas maintain separate colonies or institutions for epileptics. North Carolina maintains a colony for epileptics at the State Hospital at Raleigh. Virginia opened a colony for white epileptics in 1911, and a separate division at this colony for the white feeble-minded in 1914, the colored defectives being cared for in the Central State Hospital for the Insane.

Municipal institutions. Only two American municipalities have erected residential institutions for the feeble-minded, namely, New York and St. Louis. The latter is the outgrowth of a protracted agitation conducted by the writer from 1914 to 1920, through newspaper articles, recommendations made to the Board of Education, to the Central Council of Social Agencies (now the Community Council) and other welfare agencies, and representations made at two public hearings of Committees of the Board of Aldermen.

Private institutions. Besides the above there are numerous private institutions and schools for the educational training, or the training and custody of feeble-minded or defective children in many parts of the country, particularly in the East. One of these institutions, the Training School at Vineland, New Jersey, has attained world-wide renown because of its extensive research activities, its summer school for the training of teachers of mental defectives, and the singular excellence of the spirit which pervades the institution and gives it a distinctive atmosphere.

Registration in institutions. In January, 1920, there were 40,519 presumptive "mental defectives" (20,123 males and

20,396 females) in the public and private institutions of the United States,¹ exclusive of almshouses or penal and reformatory institutions, and 14,937 epileptics, exclusive of those included among mentally diseased patients. Massachusetts provided the most generous institutional accommodations for mental defectives, caring for 82.9 cases for every 100,000 of its inhabitants (in the general population); followed by Iowa and New Hampshire, 70.9; Maryland, 66.1; Minnesota, 62.9; and Wisconsin, 61.7.

Modification of the character of the institutions. The American institutions were originally established as schools, indeed, as "links in the chain of common schools," according to Samuel G. Howe. Education or training is perhaps still the dominant note in most of the institutions, the type of training now offered, however, being less intellectual and more practical or vocational in character. But the institutions rapidly underwent modification and became dominantly custodial in character. They became asylums or retreats for the permanent custody and care, not only of large numbers of low-grade cases (who were given little training except in a few enterprising institutions which demonstrated that even the lower grades of imbeciles could be trained to do crude types of work, such as clearing ground of rocks, stumps, and rubbish, carrying timbers and other materials for builders, and assisting in the harvesting of crops), but also of the higher grades of defectives, particularly those who were hard to control or possessed criminalistic proclivities. The last thirteen years certainly have witnessed a marked change in the character of the admissions, due primarily to the widespread employment of the Binet-Simon measuring scale of intelligence, the adoption of very liberal standards for the diagnosis of feeble-mindedness by means

¹ Of these, 28,833 were in State institutions especially established for their care.

of this scale, the extension of the concept of feeble-mindedness to include backward grades of subnormals and unstable types of fair mentality, and the assumption that these cases, referred to as middle- and high-grade morons, constitute society's worst social offenders. That, in consequence, many subnormals who are merely backward have unquestionably been admitted is indicated, among other facts, first, by the available distributions of the mental levels and educational attainments of the inmates in certain institutions (discussed in Chapter I of *Problems of Subnormality*) and second, by the adoption of the policy (the inevitableness of which was predicted a decade ago) inaugurated by Charles Bernstein, of the Rome State School in New York, and now followed by other institutions, of paroling, with or without supervision, but preferably with supervision, high-grade cases, and even middle-grade cases, of stable temperament. The large majority of such paroled inmates, especially those supervised, have "made good" socially and economically, while many have earned good incomes averaging from \$15 to \$25 a week and have proved to be acceptable workers in competition with their more nearly normal fellows.

Importance of adopting more stringent eligibility standards. It would seem to be in the interests of the public weal that persons who have sufficient capacity, with or without a minimum of supervision, to support themselves should not be permitted to become dependent upon the public bounty and to congest the institutions while more urgent cases, such as those who are incapable of independent existence, who are improperly supported or controlled, or who are delinquent or criminalistically inclined, are left at large. Our first aim should be to provide for the latter type of defectives, and to secure laws providing for their mandatory commitment and retention in colonies or placement under guard-

ianship. The vital concern of the State is in the control of mental defectives or other types of defectives who threaten to become a social menace. It is not primarily concerned with mental defectives whose parents are willing and capable, financially, morally, and intellectually, of providing proper support, protection, control, and training, and the public should not be required to assume the burden of support of such cases. That is the parents' privilege and duty.

2. PUBLIC SCHOOL CLASSES FOR DEFICIENTS

The second significant line of effort is the establishment of special classes in the public schools for "feeble-minded," "mentally defective," "defective," "delinquent," "incorrigible," and "backward" children. It would be quite futile to attempt to trace the independent development of public school classes for feeble-minded and backward children, for, although the first classes instituted were, so far as can be judged by the school reports, intended solely for mentally defective children, sharp distinctions were not, in point of fact, drawn between children who were feeble-minded and those who were merely backward. Both backward and feeble-minded children were, and still are, assigned to the same class (usually as "defectives" or "mental defectives") in many school systems both here and abroad.

Reasons for the establishment of these classes. The important factors which have contributed to the organization of special public school classes or schools for subnormals are:

(1) *Example of institutional work.* The successful educational work done for the feeble-minded in the residential institutions focused attention upon the presence of similar children in the public schools, upon the serious administrative problems which their presence created, and upon the

desirability of providing training for them in classes apart from the normal children.

(2) *Enactment of attendance laws.* The widespread enactment of compulsory school attendance laws (mostly in the early nineties in America) forced a large number of such children into school who had previously remained at home and who, unable to do the work of the regular grades, were allowed to vegetate in and overburden the primary grades, or were merely passed along from grade to grade irrespective of their educational attainments.

(3) *Surveys of "pedagogical retardation."* Surveys of the number of overage pupils in the grades, begun in America about a quarter of a century ago, showed that a large number of pupils are pedagogically retarded. In this country at least a fifth of the grade pupils in the average school system are overage from one year to six years, or even more. Moreover, there are from three to eight times as many overage as underage (advanced) pupils. In June, 1920, 23.5 per cent of the white pupils in the elementary grades in the St. Louis schools (exclusive of those in special classes or schools) were retarded from one to eight years, while only 6.5 per cent were accelerated from one to four years, based on ages six and seven as the standard ages for the first grade. The presence in the schools of this army of "pedagogical misfits" has directed attention to the necessity of effecting educational adjustments to meet their special needs.

(4) *Studies of individual differences.* The discovery of the existence of pronounced individual differences among school children, through the application of the standardized measurements and tests by the psychological, educational, physical, and medical examiners, has reinforced the necessity of providing individual attention and differentiated instruction for certain classes of deviating pupils.

Extent of individual differences. In one group of ten-

year-old boys the highest ten-percentile group was 1.2 times taller, 3.4 times heavier and stronger, possessed 2.6 times more lung capacity, and was capable of performing 7.1 times more muscular work than the lowest ten-percentile group. In the St. Louis school system in 1920, the average difference in the chronological age of the pupils per grade, based on the average differences between the youngest and the oldest pupils in each of the eight grades, amounted to ten years. In intelligence the ablest pupil was 2.6 times as bright as the dullest one based on the I.Q.'s from the Binet tests given to the pupils in all the elementary grades in an American school system. By the Binet scale a typical group of children of the same age in the grades have differed by five years or more. In testing a class in the first grade in the Miami University practice school, I found that the score of the ablest pupil was 18 times as high as the score of the poorest pupil in the Pressey Primer Scale, 21 times as high in the Myers Mental Measure, 1.5 times as high in the Detroit First Grade Intelligence Test, and 1.8 times as high in the Stanford-Binet, based on the I.Q.'s. Could they be accurately measured, we should probably find similar differences in children's emotional, temperamental, instinctive, volitional, and character traits. Children vary from states of depression or dejection, bordering on hypochondria, to states of gayety, exaltation, rapture, and euphoria, bordering on hypomania; from states of excitability, nervous erethism, furor, or "chorea insaniens," to states of profound apathy, torpor, or stupor; from states of indifference, disinterestedness, or emotional vacuity to well-nigh psychopathic enthusiasm or hysterical lability of mood; from extreme inattention or distractibility to profound absorption or monoideism; from pathological reticence to uncontrollable logorrhea; from lack of modesty to excessive prudery; from blasphemy to fanatical religiosity; from fiendish cruelty to morbid compassion.

The existence of these, and similar individual differences, has attracted the serious attention of psychologists, sociologists, physicians, and educators to the problem of the proper nurture and training of unusual children.

Special classes in Europe

Germany enjoys the distinction of having established the first special classes ("auxiliary" classes or "Hilfschüle") for mental defectives, Halle having established a class, apparently on part-time, in 1859, and Dresden a full-time class in 1867. The tendency in Germany has been to establish centralized schools rather than separate classes in the regular elementary school buildings (Berlin constituting a striking exception), to appoint as teachers the most successful among the younger teachers in the lower grades at increased remuneration, and to enroll boys and girls in the same classes. Mannheim established in 1899 one of the most complete systems of school organization in Germany, as a result of studies made by A. Sickinger of the individual differences found among the school children. The Mannheim organization includes three systems of schools: (1) the regular grades for the normal progress pupils; (2) "furthering classes" in separate buildings for about ten per cent of the slow pupils who are given the same literary curriculum, but in abbreviated form; and (3) "auxiliary schools" for the feeble-minded.

Austria established its first class in Vienna in 1885, Switzerland in Basel and Berne in 1888 (according to a different authority in 1889; Chur is said to have made arrangements to "aid" the mentally defective in 1881), Norway in Christiania in 1889, England in Leicester (in April) and London in 1892, Holland in Rotterdam in 1896, Belgium in Brussels in 1897 (although separate classes with an abridged literary program had been conducted experimentally earlier), Hungary in Budapest in 1900, Denmark in Copenhagen in 1900,

Scotland in Glasgow in 1908, and France in Paris in 1909 (or 1904, according to another statement). The school at Budapest was established by the State in a "model" auxiliary school building with eight classrooms, shower baths, roof and yard playgrounds, a continuation school for those leaving the regular day school, a library for the pupils and teachers, a vacation normal school for training teachers for auxiliary class work, a day home caring for children of employed parents from 7 A.M. to 6 P.M., an "aid society" formed by the teachers and receiving a Government subvention for helping those leaving school, and the "Imperial Physiological Laboratory," with specialists on the nervous system, eyes, ears, and bones.

Progress in England. Little information is at hand regarding the development of special classes in Europe during the last decade, but England has advanced to a place of distinct leadership among European nations both in respect to providing mandatory legislation for the organization of special classes for mentally defective children in the public schools and in attempting to restrict more sharply the admission requirements. The large majority of the American States have been woefully outdistanced by England. England, having made the permissive Act of 1899 mandatory in 1914, now *requires* education authorities to establish day or residential schools for "children who, not being imbecile and not merely dull and backward, are by reason of mental and physical defect incapable of receiving proper benefit from the instruction in the ordinary public elementary schools." That is to say, admissions in England are legally restricted to "mentally defective children," who are defined as feeble-minded ¹ persons between the ages of seven and sixteen, although it is known that imbeciles and backward

¹ Used in the technical English sense. The 1899 Act marks the first legal recognition of this grade of mental defective in England.

children are sometimes assigned. The Government allows a special grant of money for the maintenance of these classes when organized in accordance with the specifications. "Model arrangements" have been issued by the Board of Education regarding the admission procedure and the organization of the classes. Attendance is compulsory, except that the parents' consent must be obtained (and it must not be unreasonably withheld) before a child can be transferred to a boarding-school. The classes are frequently organized in special school centers in a special building adjacent to, but detached from, the regular school building from which it is often separated by a high wall. The children are brought to school by guides or in conveyances when necessary. In 1921, there were 16,123 pupils enrolled in 201 special schools in England and Wales. At that time London maintained 87 junior school centers for younger mental defectives, with an enrollment of 8076 pupils, 12 centers for older boys with 1300 pupils, 5 centers for older girls with 384 pupils, one residential training home for 80 high-grade girls, mostly above 16 years of age, and evening classes for those leaving the day school centers. The educational activities conducted in the best special classes in England have won merited approbation.

Classes for the backward. The need has been recognized of "intermediate schools" or "fourth standard schools," for children who, although not mentally defective, cannot make the regular grades, who need a preponderance of concrete, objective work, drill, handwork, and practical training for life, but there were only about a dozen "educational areas" in England and Wales in 1921 which maintained "backward classes."

Training schools for special-class teachers. Schools for the training of teachers for mentally defective children in Europe have been maintained in Hungary (at Budapest),

Switzerland (at Zurich, and at Geneva in the Jean-Jacques Rousseau Institute), Italy (in the "Teachers Seminary" at Rome), Denmark, England, and possibly elsewhere. A number of short-term summer courses have been offered in England.

After-care service. In the organization of "protective bureaus" or "after-care committees or associations" for the purpose of safeguarding the children from economic and moral exploitation after leaving school and aiding them in obtaining and holding positions, Europe has forged far ahead of America. Such associations have been in existence in Austria (Vienna), Hungary (Budapest), Germany, Belgium, France (Paris has an organization in connection with every auxiliary school), England (in many cities), and doubtless in other countries.

Special classes in America

Apparently the pioneer public school special classes established in the United States ¹ for mentally unusual children were intended for disciplinary, incorrigible, and truant boys, such classes having been organized in New York City in 1874, in Cleveland (two classes) in 1879 (or 1875 according to one authority), and in Providence in the spring of 1894. As an offshoot of the latter "school for special discipline and instruction," which was found to contain "mentally defi-

¹ We may give at this point in chronological order the date of opening of different kinds of public school special classes in the United States, according to information at hand:

For the deaf	1869	Boston
For the refractory and truant	1874	New York
	1879	Cleveland
For the mentally defective	1896	Providence
For the crippled	1899	Chicago
For the blind	1900	Chicago
For the partially sighted	1913	Roxbury, Mass.
	1913	Cleveland
For children of weak hearts (cardiac classes)	1917	New York
(Cardiopathic children were assigned to classes for crippled children in New York City from 1906 to 1917).		

cient" children, a "school for backward children" was established on November 30, 1896, which aimed to supply the "needed care and methods of teaching fitted" to "mentally deficient children." This, apparently, was the first public school class in America consciously and specifically established for the training of feeble-minded children. It has been asserted that Providence was also the first city in the country to effect a fairly complex organization of special classes. The character of the class started in Springfield, Massachusetts, in 1897,¹ cannot be definitely determined from the Board's reports. Nor are the "subnormal classes" started in 1898, in Chicago, clearly defined, but seem, from the superintendent's report of 1897, to have been intended for "feeble-minded" children. The class started in Boston in 1899 was clearly intended for the feeble-minded and not for "children ordinarily called stupid." The ungraded classes in New York City, started in 1900, were intended, according to the superintendent's report for 1899, for mental defectives apparently above the "purely imbecile" grade. Classes for backward children were, according to report, started the same year. The classes organized in Philadelphia in 1901 were, it is alleged, the outgrowth of classes started somewhat earlier for truants and incorrigibles, although this cannot be verified from the school reports. Los Angeles added special classes in 1902, and thereafter other cities in all parts of the country followed in rapid succession. Many cities now maintain elaborate organizations of special classes and departments of tests and measurements, notably New York, Chicago, Philadelphia, Detroit, Cleveland, St. Louis, Boston, Los Angeles, Cincinnati, Newark, Seattle, Rochester, Oakland, and Providence.

¹ The year has been variously given as 1894, 1897, and 1898. Nearly all of the dates used in this book are those reported to the writer in 1913 by authorities from the schools concerned.

Special-class statistics. No accurate data are available concerning the number of cities maintaining special classes or concerning the grades or kinds of subnormals assigned to different kinds of special classes. Based on a questionnaire investigation instituted by the United States Commissioner of Education in March, 1911, it appeared that out of 898 cities reporting, 99 supported classes "for mentally defective" (including classes for epileptics), and 220 had classes for "backward children" (including instances in which "special teachers are employed to assist slow pupils"). Most of the 99 cities were probably included among the 220. In the fall of 1913 the writer, before becoming aware of the foregoing investigation, addressed a questionnaire to all the cities in the country — about 1350 — with a population in excess of 4000. Replies were received from 302 cities, including all with a population of 100,000 and over, 53 per cent of those with a population of from 25,000 to less than 100,000, and 13.9 per cent of those with a population of less than 25,000. The replies indicated that 16 per cent of the cities of 100,000 or more did not maintain any classes for mentally defective or backward children, while only 40 per cent of those replying with a population of from 25,000 to 100,000, and only 17 per cent of the respondent cities of less than 25,000 maintained such classes. While sharp or uniform distinctions between different orders of classes for different kinds or grades of subnormals apparently had not been drawn, so far as could be inferred from the replies, 108 cities maintained special classes for the lower grade pupils (many or most of whom were "mentally defective"), and 111 maintained ungraded classes for "backward children." Since the writer's figures are based on about one third as many answers as were obtained in the inquiry by the Bureau of Education, and yet show 68 per cent as many classes, it may be inferred that during this brief period there had been an

appreciable increase in the number of cities supporting classes for the mentally defective and backward.

In the most recent compilation of statistics on public-school special classes for subnormals, contained in Bulletin 59, published in 1923 by the Bureau of Education, the conclusion is reached that there has been a considerable increase in the number of cities supporting such classes. This conclusion, however, appears to be based on erroneous facts. Thus the statement is made that only 52 cities made special provisions for subnormal children in 1913 as against 133 in 1922. But the earlier investigations cited above show, respectively, that 220 and 162 of the respondent cities in 1911 and 1913 reported special classes, which is over four times and over three times, respectively, the number reported by the Bureau of Education for 1913. That the periodic summaries of public-school special classes reported by the Bureau of Education are highly inaccurate, is indicated by the following facts. For years the writer submitted to the Bureau reports on the number of schools for individual instruction for mental defectives and the number of ungraded classes for the borderline and backward in the St. Louis public schools, but no notice was ever given the latter, although they were more than twice as numerous. In the report for 1922, no mention is made of the special and ungraded classes in the schools of Dayton, Ohio, although the writer submitted data on both types of classes, nor is there any mention of the special classes in Akron, Ashtabula, Cleveland, Columbus, Youngstown, Hamilton, Middletown, Marion, Marietta, Lima, and other cities in Ohio. The inaccuracy of these Bureau reports is partly due to the difficulty of securing the return of the questionnaires, and partly to the failure properly to utilize the data which are returned. The situation is unfortunate because none of the non-official investigations of special classes made during the

last few years are as extensive as the 1911 and 1913 investigations. Nevertheless, although no adequate, reliable recent figures are available, there can be no doubt that many more cities now have special classes for subnormals than was the case a decade ago. The chief stimulus to the establishment of classes during this period is traceable to the use of the Binet scale, and the enactment in many States of educational measures in the interest of mentally handicapped pupils.

State legislation. New Jersey in 1911, New York in 1917, and Massachusetts in 1920, made it obligatory for boards of education to ascertain the number of pupils in the district who are three years or more retarded in mental development, to establish special classes when there are ten or more such children, to transfer the assigned pupils, and provide them with instruction adapted to their needs. The enrollment is limited to fifteen pupils to the class. State aid is granted in New Jersey (\$500 a year for each teacher employed) and in New York (half of the teacher's salary up to \$1000) for the support of such classes under stipulated conditions. This legislation has resulted in the rapid multiplication of special classes in these States, but it is inevitable that, as the statutes are drawn, both feeble-minded and backward children will be assigned to the same classes, and many mental defectives must wait until they test three years retarded in intelligence before they can be assigned. Minnesota in 1915 encouraged the organization of special classes for children not "less than two years nor more than four years below normal mental development" (which excludes many educable mental defectives and admits many backward children) by granting State aid to the amount of \$100 for each child attending the full year. The teachers must hold special certificates. Missouri, in 1919, by the enactment of a bill drawn by the writer, made mandatory the es-

tablishment of public school classes for the blind, deaf, and feeble-minded when there are ten or more of each type in a school district, authorized adjoining districts jointly to support classes, and provided State aid for classes when properly organized and taught by specially trained teachers. In extending the provisions of the law to backward, crippled, and speech-defective children in 1921, the bill was, through lack of proper watchfulness, made permissive. The State aid is \$300 for teachers of backward children and \$750 for teachers of the other types. Pennsylvania, since July 22, 1919, has required boards of directors to "provide and maintain special classes or schools" for pupils who, "because of apparent exceptional physical or mental condition, are not being properly educated or trained," and who have been certified as "fit subjects for special education and training," provided there are ten or more of a given type in a school district. Boards may jointly maintain classes, or may supply training outside of the school district. The State pays one half of the total expenses incurred, provided the classes and qualifications of the teachers have been approved by the State Board of Education. In Wyoming the State Board of Education is required to make special educational provisions for various types of handicapped children when no adequate provisions have been made in the public schools or other public institutions. A special bureau has been established to superintend the work. Connecticut in 1921 required boards of education to make enumerations of "educationally exceptional children" over four and under sixteen, who, because of "mental or physical handicap," "need special educational provisions," and to establish special classes on the petition of parents of ten or more of such children. The same year California enacted a permissive act applicable to pupils who would profit from special instruction, Washington made compulsory in cities of the first class

and permissive in others, the establishment of special classes for children not receiving the instruction required by their special needs, and for the "delinquent, predelinquent, or dependent" (the parents' or guardians' consent being necessary for transfer), while Wisconsin authorized State aid for the education of "exceptional persons of school age," provided the teachers possess the necessary qualifications and provided the classes have been approved by the State Superintendent of Schools. The act is permissive. Louisiana in the Acts of 1920 and 1922 authorized State aid for the instruction of mentally, morally, or physically deficient children whose needs cannot be properly met in the regular grades, provided the courses of study have been approved by the State Board of Education. The parish school boards are authorized to enforce attendance in the classes. The Illinois school laws of 1921 and 1923 require the enumeration of children who are "specially handicapped" from the medical, psychological, and social standpoints. Oregon enacted a permissive statute in 1923 providing for classes for "educationally exceptional" children (including both the bright and the dull), and for the enumeration of such children.

Many States have enacted legislation for the appropriate education in the public schools of deaf, blind, and crippled children. Ohio has granted exceptionally generous financial aid for the support of such classes since 1921.

Training schools for teachers of subnormals. Many State and private institutions have for years offered one or more courses on the psychology and education of mentally deficient and mentally handicapped children in the regular or summer sessions, notably the Universities of Pennsylvania, New York, Yale, Pittsburgh, Columbia, Chicago, Harvard, Stanford, College of the City of New York, Iowa, Minnesota, Missouri, Michigan, Ohio, Washington, California, Colorado State Teachers College, the Harris Teachers Col-

lege, Michigan State Normal College, New Jersey State Normal School at Trenton, the New York Normal Schools at Oswego, Potsdam, and Geneseo, and Miami University. The Craig Colony School was opened in 1920, and established by legislative action in July, 1922, as a "department of extension teacher training" of the Geneseo State Normal School. Ohio seems to have been the first State to pass specific legislation for the establishment of a department "for the training of teachers for subnormal and delinquent children." The Bureau of Special Education and Psycho-Educational Clinic of Miami University was authorized in February, 1920. This bureau as now organized has, however, extended its primary function of training special-class teachers to include the making of tests and clinical examinations, advising with school authorities regarding the classification of deviates and the organization of special classes, and the prosecution of research. Practically all colleges and normal schools now offer courses in mental and educational tests during the regular or summer sessions.

State supervision. Several State departments of education have appointed directors or supervisors of the special classes for subnormals, including New York, Pennsylvania, Wisconsin, Wyoming, Connecticut, and Minnesota. A number of State departments have also established divisions of tests and measurements.

After-care. After-care service for the feeble-minded on leaving the special classes has not been developed in connection with special classes in America to any extent. A few visiting teachers or social workers have been appointed by boards of education, notably in Boston, New York, and Cleveland, to gather data on ex-special class defectives and to aid them in obtaining employment. Various social service organizations, no doubt, render similar service in many other cities.

In Canada special public school classes for mental defectives were not established until 1910 (Toronto) and 1911 (Fort William and Hamilton).

3. SCIENTIFIC INVESTIGATIONS OF MENTAL INEFFICIENCY

The third type of significant work prosecuted in the interest of a better understanding of the mentally inferior child, particularly during the last decade or two, is the scientific investigation of the problem of mental deficiency, and allied problems, from the standpoint of psychology, neuropathology, biochemistry, physiology, anatomy, heredity, criminology, economics, and statistics. Because of the urgent practical necessity of properly differentiating between the different degrees of feeble-mindedness, backwardness, and mental defect, we must rank as most significant among the more recent developments the construction of standardized tests and scales for determining the level of intelligence, the degree of motor or performance ability, and the degree of proficiency attained in the various school branches; the establishment of psychological, psychopathic, or psycho-educational clinics in universities, public schools, courts, institutions for defectives, immigrant stations, and the like; and the establishment of bureaus or divisions of tests and measurements especially in the universities, public schools, and State departments of education. Practically every large school system now maintains some such clinic, bureau, or department, while standardized psychological and educational tests are to-day given to some extent in almost all public school systems in America. This whole movement can be traced back to the construction of the first individual measuring scales of intelligence in 1906 by De Sanctis, and Binet and Simon. Since that date many revisions, modifications, and extensions of the Binet scale and hundreds of so-called group tests of intelligence and educational achieve-

ment have appeared in rapid succession. The widespread employment of these tests, which are not subject for discussion in this book, whatever their imperfections and virtues may be, has indubitably done more than anything else to promote the organization of special classes and the introduction of differentiated courses of instruction in the public schools.

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CHAPTER III

PSYCHOLOGICAL THEORIES OF FEEBLE-MINDEDNESS AND DEFINITIONS OF FEEBLE-MINDEDNESS AND BACKWARDNESS

RIVAL THEORIES OF FEEBLE-MINDEDNESS

IN attempting to formulate a psychological theory of feeble-mindedness, we must strive to answer two questions: (I) Do the feeble-minded differ from the normal qualitatively or quantitatively? Is the difference qualitative or quantitative? (II) Is feeble-mindedness a simple or complex condition?

I. The qualitative vs. the quantitative theory

1. The qualitative theory. Binet and Simon,¹ hold that the "defective child" differs from the normal in the *quality* or kind of his mental make-up. He is "inferior not in degree, but in kind." He belongs to a different kind or type of being.

The question of scattering. One of the chief arguments which they advance is that the retardation in the mental defective is not uniform or equal in all directions. "So far as certain faculties are concerned, he remains on the level of a younger child, but in respect to others, he is on a level with normal children of his own age." This "want of equilibrium" is the "specific characteristic" or the "differentiating attribute of the defective child." E. A. Doll, adopting the idea of Binet and Simon, has elevated the lack of equilibrium to the importance of a specifically diagnostic (patho-

¹ Also apparently P. Sollier, who seems to regard idiocy and imbecility as distinct conditions or entities.

gnomonic) sign of "potential feeble-mindedness." "In the Binet tests the typical normal child has a basal year not more than one year below his chronological age and passes but a few tests beyond his chronological age. The potential feeble-minded, on the other hand, has the basal year more than one year below the chronological age," and "scatters, failing in tests one would expect a normal child of that age to pass, and succeeding in others not expected." Many other writers have adopted the assumption that the intelligence in the feeble-minded (and the psychopathic; e.g., H. H. Goddard and Florence Mateer) is more unevenly developed than in the normal.

Scattering not exaggerated among feeble-minded. But do the feeble-minded, in point of fact, vary more in different mental traits than the normal or backward? Binet and Simon, unfortunately, did not produce adequate proof that they do. They merely described a few imbeciles who evinced great irregularity in their mental make-up. The wide generalization reached by them and by Doll was not based on the analysis of a large number of children of various grades of intelligence. During the last five years the writer has made several analyses of "scattering"¹ in the 1908, 1911, and Stanford Binet-Simon scales based on an aggregate of 2206 records of numerous types of subjects, mostly juveniles: normal, backward, borderline, morons, imbeciles, epileptic, insane, psychopathic, neurotic, unstable, and delinquent. After reconciling various discrepancies between the results obtained from the different scales, the conclusion reached was "that there is no warrant for the assumption that 'unequal development,' 'lack of uniformity,' or 'scattering' in intelligence is the 'specific characteristic,' the 'differentiating attribute,' the pathognomonic sign of feeble-mindedness or potential feeble-mindedness."

¹ The number of tests passed beyond the basal Binet-Simon age.

In fact, it seems to be the very want of irregularity, at least so far as general intelligence is concerned, as determined by scattering in the Binet scale, which characterizes the lower grades of the feeble-minded. The normal pupils scatter most and the imbeciles the least. The conclusion here reached is in harmony with the findings of S. I. Pressey, who has studied irregularity among various types of subjects in the Binet scale by different methods, and of Julia Mathews, who has studied the problem in a group of delinquents.

Obviously the prop derived from this particular argument cannot be used to bolster up the qualitative theory.

2. **The quantitative theory.** According to this theory, advocated by Edward Seguin, Francis Galton, J. F. Herbert, E. L. Thorndike, Naomi Norsworthy, Leta S. Hollingworth, and others, the fundamental difference between the normal and the feeble-minded is one of degree, amount, or quantity, and not one of kind. We all belong to the same genus homo; we all have the same kinds of powers and capacities; but the feeble-minded are less richly endowed. They possess less judgment, less understanding, less intelligence, less initiative, less memory, less power of attention. The powers which the feeble-minded possess are the same in kind as those possessed by the rest of us, but they possess them in smaller amounts. The qualitative differences which we are wont to predicate are more apparent than real. Thus, when we say that the feeble-minded possess rote memory but no logical memory, all we mean is that they have little logical memory. What logical memory they do possess is akin to the logical memory possessed by the normal population. All the apparent qualitative differences in the mental make-up of the feeble-minded can, then, be resolved ultimately into quantitative differences. The quantitative differences are more basic than the qualitative.

Meaning of "intelligence age." The arguments in favor

of this interpretation of feeble-mindedness will be given in connection with the consideration of the consequences of the quantitative theory. But the reader must first be cautioned against making unwarranted inferences from the quantitative rating of defectives. Thus, when we say that a child of twelve has a five-year mentality or intelligence level, all we mean is that he is approximately on a par with a normal five-year-old child as judged by the measuring scale employed, being inferior in some tests, and superior in others. We do not mean that he has the identical mental constellation or pattern of the five-year-old, or that his mental processes function exactly as they do in a normal child of five. The normal five-year-old would possess more initiative, spontaneity, naïveté, infantility, and potentiality for growth than the twelve-year-old with a five-year mentality. Moreover, the instinctive, emotional and psychomotor development of the twelve-year defective would almost always be more mature or more highly advanced than in the normal five-year-old. He would perhaps be on the plane of the ten- or twelve-year-old in instinctive development, and the seven- or eight-year-old in motor development. Twelve-year-old defectives of the five-year intelligence level are not like kindergarten children and should not be trained like such pupils.

Two consequences of the quantitative theory. The truth of the quantitative theory seems to be enforced by two inevitable consequences of the theory itself, the correctness of which seems to be well established.

(1) All persons psychologically classifiable along one surface of distribution. The first corollary of the quantitative theory is that all human individuals can be arranged psychologically in a straight line from poorest to best, just as all human individuals can be similarly arranged with respect to any physical trait or anthropometric measurement. Thus,

if arranged in the order of height, all adults would occupy relative positions between a minimum of fifteen inches (the shortest adult measurement of which I have record, that of a female dwarf, less than the length of the average child at birth), and a maximum of nine feet and three and one-half inches (a Finnish giant). The line connecting these extremes would probably be a straight oblique if a sufficient number were measured.

Psychologically, human individuals can be similarly arranged in a straight line, either with respect to a single mental trait or a combination of traits. Thus the variation among adults was from 100 to 200 seconds in the time required to draw a line through a designated numerical symbol (e.g., 0), which occurred out of proper numerical sequence on a blank containing the ten number symbols. In the time required to add 48 single columns of 10 one-place digits, 37 adult women varied from 240 to 896 seconds.

In such a complex trait as "morality," human individuals would range from the moral imbecile, or the most immoral being, the vilest wretch, at the lower extreme, to the most moral, just, or upright person, the saintliest saint, at the other extreme. All other individuals would come between these extremes, with the average sinner midway between.

Classification according to intelligence. In general intelligence or general mental capacity — coming to the specific application in point of the theory — mankind can be arranged on one surface of distribution, the least gifted, the profound idiots, occupying the lower extreme, the most gifted, brilliant, or precocious, the geniuses, potential geniuses, or prodigies, coming at the upper extreme, and all others distributing themselves between these extremes. This surface is divisible into three main groups as indicated by the divisions above the horizontal line in the following

diagram, and into further minor subdivisions, as indicated by the divisions below the horizontal:

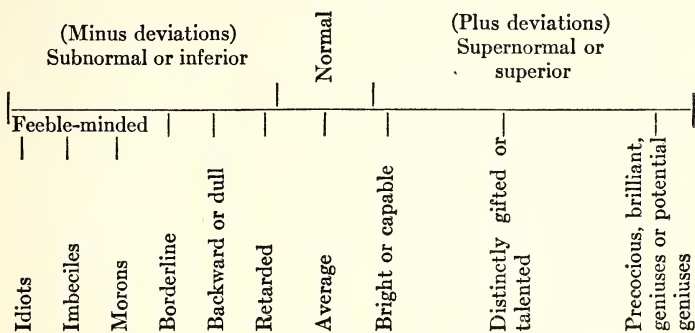


FIG. 4. SURFACE OF DISTRIBUTION OF HUMAN BEINGS ACCORDING TO GENERAL ABILITY

The terms "mentally subnormal" or "inefficient," and "supernormal" or "gifted" are used generically, the former embracing all degrees of deficiency below normal, and the latter all degrees of excess above normal. The terms "mentally inferior" and "mentally superior" are equivalents of the above designations. Different authorities draw the boundary lines between the minor subdivisions at different points and do not employ the same terminology. At present we know far more about the subnormal side of the surface than the supernormal, not only because subnormals have been scientifically studied for a much longer period of time (at least since the days of Itard), but because it is easier to differentiate among subnormals than among supernormals. The supernormal mind is far more complex, intricate, subtle, inscrutable, and probably will defy minute analysis for a long time to come. However, most authorities are agreed that mankind can be arranged in rank order with respect to general mental capacity in conformity with the necessary requirement of the quantitative theory.

(2) *Continuous gradation of ability.* The second consequence of the theory is that no sharp or distinct lines of demarcation can be drawn between the different groups or subdivisions of the intelligence classification. That is, there are no gaps or sharp divisions between the normal and retarded, between the retarded and backward, between the backward and borderline, between the borderline and high-grade feeble-minded, etc. The different groups shade insensibly into one another. They are merely different grades or degrees of the attribute in question. Norsworthy holds that even the "idiots" belong to the same human species. To constitute a distinct species the P.E. (probable error) would have to exceed 5 "from the median for ordinary people." She found the scores in the intelligence tests to be about -7 P.E., in the memory tests, -3.5 P.E., and in the maturity records, -2.7 P.E. In every test some defectives equaled the median for ordinary children. On the qualitative theory we should expect to find a distinct gap or line of cleavage, at least, between the feeble-minded and the not-feeble-minded. But the conceded impossibility of making infallible diagnoses of the high-grade feeble-minded, or even measurably satisfactory differentiations between the high-grade feeble-minded and the borderline, proves that no such line of demarcation exists in nature. Man differentiates and classifies from different points of view, and arranges facts into separate and distinct groups and categories, in accordance with predetermined purposes, in order to further clearness and consistency in his thinking. But the human race which nature has produced constitutes, from lowest to highest, an unbroken continuum. All types of humans represent, plus or minus variants, deviations of excess or deficiency, of the qualities and attributes inherent in all human beings. Not only so, the curves of intelligence capacity of the infra-humans and the humans overlap. Many quadrupeds and

infra-human primates are more intelligent and more amenable to training than all grades of idiots and many imbeciles.

Character of the curve of distribution of traits. In studying human traits we are not only interested in knowing the size of the extreme measures and the fact that all other measures are intermediary, but we want to know the frequency of occurrence of each of the measures. How are the measures distributed? Gauss formulated the mathematical law according to which the measures may be expected normally to distribute themselves. Such a "probability curve," or "normal frequency curve or polygon," as it is also called, is shown in Fig. 5.

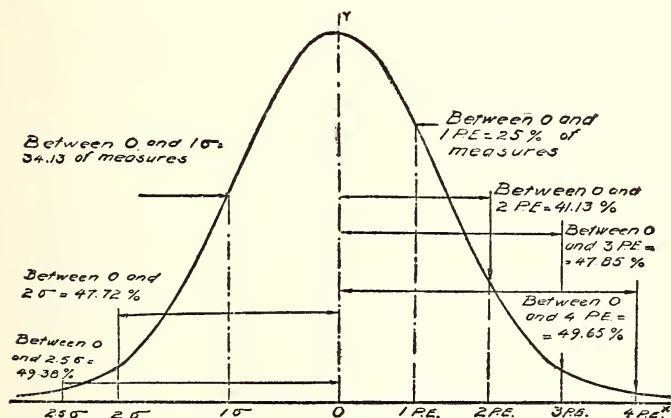


FIG. 5. NORMAL FREQUENCY CURVE (after H. O. Rugg)

Characteristics of the ideal probability curve. This curve possesses the following fundamental characteristics:

- (1) The measures will cluster around one "mode," — i.e., the measure of greatest frequency. The mode indicates the typical or central tendency of the determinations.
- (2) Small variations from the central tendency are more fre-

quent than large variations. The decrease is at first slow, then rapid, and then slow again, in consequence of which the curve appears bell-shaped; hence the designation "bell-shaped curve."

- (3) The variations are continuous. There are no gaps or sharp division points between the different segments of the curve, as already explained.
- (4) The curve is symmetrical — that is, there are as many plus variations as minus variations.¹

Factors affecting the curve. These characteristics, however, apply only to the ideal curve. In practice the normal curve is only approximated. The closeness of the approximation may be augmented by increasing the number of measurements, by basing results on a chance distribution of cases, and possibly by confining the measurements to original traits as against acquired traits. If the determinations are based on selected cases, the curve may be "skewed" toward the one side or the other, or it may contain two modes (bimodal) or several modes (multimodal). Moreover, the

¹ Space permits merely a bare reference to other attributes of the curve when applied to intellectual ability: (1) The concept of a normal person as one who is perfectly symmetrically developed in all attributes is a myth. All persons possess "longs" or "shorts" in some degree. (2) The concept of a subnormal or a supernormal person as uniformly or symmetrically deficient or talented in all directions is a myth. While there are some persons who deviate more or less uniformly or generically, many are merely specifically disabled or gifted. (3) There are temporary forms of subnormality or supernormality, although most persons probably continue to occupy their relative rank positions. (4) Both subnormality and supernormality sometimes rest upon a neuropathic or pathological background. Of seven classes of bright children recognized in a Japanese study, most were classed as pathological or morbid. The belief is general that precocious children are delicate, puny, sickly, "all brain and no muscles," and doomed to early extinction, decadence, or insanity. Nevertheless, many supernormals are perfectly healthy and well-poised. (5) Our concept of normality will differ according to race and social condition. It is idle to assume that norms for children in New York City would be applicable as measures of so-called native intelligence to those in Patagonia. The concept of "native intelligence" is, to a degree, also mythical.

normal curve probably tends to skew toward the minus side, owing to the frequent action of the forces which tend to produce physical and mental deterioration: defective (caco-genic) heredity, diseases, toxins, alcohol, tobacco, opiates, accidents, abuse, neglect, indolence, and the like.

The Gaussian curve applied to intelligence. The distribution of general intelligence seems to follow the normal probability curve, if we may judge by the distribution of the I.Q.'s for unselected grade children, as shown in Fig. 6. The

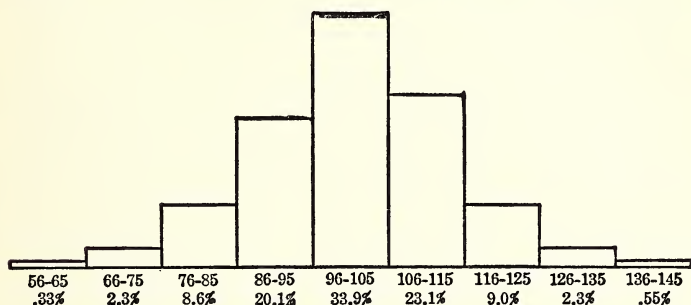


FIG. 6. DISTRIBUTION OF I.Q.'S OF 905 UNSELECTED SCHOOL CHILDREN AGES 5 TO 14 (after L. M. Terman)

curve is a reasonably close approximation, but it must be remembered that the tests were purposely so placed as to "cause the median mental age of the unselected children of each age group to coincide with the median chronological age."¹

II. Feeble-mindedness as a unit trait vs. a complex condition

Is feeble-mindedness a simple, unitary defect or a complex condition? According to H. H. Goddard, C. B. Daven-

¹ However, when age standards have been thus derived it rather strains the point to argue that the distribution of intelligence according to the normal probability curve proves that the scale of tests has been accurately standardized.

port, and others, feeble-mindedness is due to the absence of a unit trait or determiner in the germ cells, the presence of which constitutes normal intelligence or normal-mindedness. Feeble-mindedness behaves like a Mendelian recessive,¹ while normality behaves like a dominant.

If this theory were correct the diagnosis of feeble-mindedness would be comparatively simple. There would be a sharp line of division between feeble-mindedness and normality, and it would be merely a question of determining in any particular case whether or not the individual possessed the "unit trait" or "unit character." If he did, he would be adjudged normal; if he did not, feeble-minded. As we have seen, such a sharp line of demarcation is purely imaginary. The distribution of intelligence in both the feeble-minded and the normal is continuous. Karl Pearson and G. A. Jaederholm found on the basis of Binet tests that "70.5 per cent of normal children fall into the range of intelligence of the so-called mentally defective; and 60.5 per cent of so-called mentally defective children have an intelligence comparable with that of some normal children." The large amount of overlapping found here was undoubtedly due to the presence of backward children among the feeble-minded and dullards among the normals. But that circumstance does not invalidate the main argument.

Complexity of feeble-mindedness. From these and other considerations we reach the conclusion that feeble-mindedness, instead of being a simple classificatory (nosological) entity due to a constant specific cause with definitely restricted and invariable symptoms (such as are diphtheria or typhoid fever), is a highly complex condition, complex in

¹ A *recessive* is a character from one parent which remains undeveloped in the progeny when associated with the corresponding dominant from the other parent, while a *dominant* represents a character from one parent, which appears in the progeny to the exclusion of the contrasted character from the other parent.

respect to the fact that it may affect in unequal degree various functions, physical, intellectual, instinctive, volitional, emotional, social, and moral; in that it may cover a wide range of defect from profound idiocy to high-grade feeble-mindedness; in that it may be caused by a great variety of etiological factors, hereditary and acquired, and in that the underlying brain defect (pathology) may differ greatly, as will be shown in the Appendix.

Individual differences among the feeble-minded. Let us remember that there are pronounced differences in physique, disposition, attitude, emotivity, energy, application, and in social and moral traits between feeble-minded children even of the same grade of intelligence or degree of impairment, just as there are similarly pronounced differences between normal children of the same age, maturity, or intelligence level. No two idiots are exactly alike: some are apathetic, others excitable; some have more of one trait, others more of another. The "typical imbecile face" of established tradition is largely mythical. Some imbecile faces are pleasant, others repulsive; some are beautiful, others ugly; some look intelligent, others vacuous; some are mobile, others immobile. Few characterizations apply to the whole class of the feeble-minded, and fewer still to every feeble-minded individual. Between feeble-minded, as between normal individuals, diversity, unevenness, and variation are the rule and not uniformity, symmetry, and sameness. Hence descriptions of the feeble-minded must be largely restricted to generalizations respecting the average or most frequent representatives of the different grades or physical types. Owing to the demonstrated existence of "individual differences" in the mode of origin (pathogenesis), in the underlying brain defect (pathology), and in the manifestations (symptomatology), there is no simple, single, or infallible test of feeble-mindedness such as demanded by the assumption that it is due to the absence of a unit trait.

Definitions. In dealing with handicapped children as educational or social problems, it is of the utmost importance that the children be properly diagnosed and differentiated. This work must be done by properly qualified physical, psychological, and educational examiners. It is particularly important to arrive at clear-cut conceptions of what constitutes feeble-mindedness (or mental defectiveness, which is a synonymous term), mental deficiency, and backwardness or dullness. The Appendix at the end of the book contains a brief discussion of the classification of mentally defective children from five points of view, while Part II contains a vital recommendation regarding the application of the term "mental deficiency" to school children. In the remainder of this chapter an attempt will be made to differentiate between feeble-minded and backward children from five points of view. Brief definitions from the standpoint of instruction are given of other types of handicapped children in Chapter V.

DEFINITION OF FEEBLE-MINDEDNESS

The definition of feeble-mindedness will vary according to the point of view. The condition can be defined from at least five points of view.

1. **Anatomical definition.** Anatomically feeble-mindedness represents a condition of serious and permanent nervous defect, due to arrested neural development (agenesis), or damaged nervous tissue, affecting particularly the brain, and especially the external layer of gray cells (the cortex), and dating from the prenatal or early postnatal period of the child's development. Herbert Woodrow believes that feeble-mindedness cannot be acquired after the age of five, at which time the brain is said to have attained about ninety per cent of its final weight. The attempt to reach such a conclusion from a consideration of brain weight alone may, however, be

fallacious, for it may be precisely the higher functions, cerebral and psychic, which mature after the age of five, say between five and nine, which may be most seriously impaired in mental defectiveness. Should these functions normally attain a stage of development by the age, say of ten, which will enable the individual to lead an independent existence, then serious brain injuries (lesions) occurring any time during the first nine years might produce mental defectiveness, in the technical sense of the term.

According to this definition, the essential basis of feeble-mindedness is the defective morphology of the nerve cells of the brain (cerebral neurones). But the condition may be associated with various accessory and inconstant defects and diseases. The feeble-minded as a class are somewhat underdeveloped in strength, muscular tonicity, weight, and particularly height. It is believed that they are more susceptible to contagious diseases and that they suffer more frequently from the ordinary physical defects and from glandular, cardiac, and circulatory defects. But feeble-mindedness itself is not an active illness or disease process, except possibly in a few special types, such as progressive hydrocephaly, active syphilis, epilepsy, and cretinism.

2. Educational definition. The condition may be pedagogically characterized as the inability after years of instruction or protracted drill to acquire any considerable or useful mastery in the literary subject-matter, especially written composition, arithmetic, and reading.

Maximum achievement criterion. In terms of grade achievement, the highest grades of children whom we have felt justified in diagnosing as feeble-minded cannot do successful all-round work in the literary branches beyond the latter part of the second grade or the first part of the third grade, as indicated by our investigations by various methods of the educational accomplishments of various grades

and types of subnormals in special public school classes, very few of whom were over fourteen years of age. This would place the feeble-minded on a par with normal children of eight or nine. In the special schools of Birmingham, England, the ablest pupils at the age of sixteen were "able to read and calculate to about the same extent as a normal child of eight or nine," according to Mrs. Hume Pinsent. A. F. Tredgold concluded that none of the mental defectives of twelve years in a London special school reached "normal standard II" in "scholastic acquirements." In a survey of six hundred London special school children, Cyril Burt "found only seven per cent up to and none above the level of standard II. This is equivalent to a scholastic age of eight." W. S. Cornell, after examining mental defectives in the Philadelphia schools, concluded that "the high-grade feeble-minded as a rule stick fast" in "the third school grade." Some mental defectives, however, possess special abilities and may reach higher levels in one or more branches. Most mental defectives, fortunately, possess considerably higher ability in the manual and industrial arts.

Retardation criterion. How much pedagogical retardation is indicative of feeble-mindedness? J. B. Miner suggests as a "low" estimate five or more years of retardation for children twelve years of age or older, which would place them in the first or second grade, and as a "maximum" estimate four or more years of retardation for the children of the same ages, which would be equivalent to second- or third-grade capacity.

Rate of progress criterion. With respect to the rate of progress in school, F. C. Shrubsall estimates that the "true defective" advances at less than half, and the "merely backward" at more than half of the normal rate. Of course, the rate of improvement varies enormously with the degree of the deficiency. With possibly one or two exceptions, we

have never known imbeciles who could do satisfactory all-round first-grade work after six or seven years of schooling. The ablest imbeciles made less than fifteen per cent of progress. On the other hand, the highest grade of the mental defectives progressed only about one third as rapidly as the normal children. They required about three years to do one year of work in the literary curriculum.

Value of the pedagogical definition. The pedagogical criteria suggested above for the diagnosis of feeble-mindedness are far from infallible, nor are they even reasonably reliable, owing to the fact that a child's rate of progress and possible attainments in school depend on many factors other than inherent ability, as explained in the discussion of the educational classification in the Appendix.

3. Psychological definition. Psychologically feeble-mindedness represents a condition of mental non-development (agenesis), arrest, deficiency, or deterioration which is very grave and permanent, which dates from early life, and which always affects the intelligence, judgment, or understanding, and which may affect, and usually does affect to some extent, the emotional, instinctive, motor, volitional, and moral traits of the individual. The intelligence defect is a basic and constant feature: without a radical defect in the sphere of intelligence the child could not be considered feeble-minded no matter how ignorant or illiterate he might be, or abnormal in his emotional, instinctive, volitional, psycho-motor, or moral reactions.

There are three distinct psychological criteria of feeble-mindedness predicated in this definition:

(1) *Early onset.* The defect must date from the child's intrauterine or early postnatal life. It must have occurred prior to the maturation of the mental functions, how long prior has not been determined. Some hold that the arrest or defect must have taken place during the first four or five

years of life, but our knowledge is too imperfect to permit a categorical pronouncement on this point. Nevertheless, in the accepted narrow, technical connotation of the term, feeble-mindedness means *amentia* — non-development of mind — as distinct from *dementia* — loss or decay of mind. The feeble-minded have never had more mind before, unless *dementia* has been superposed upon a background of *amentia*. They have never had normal potentials, unless, indeed, cerebral degeneration of an originally sound brain began in early life, in which case the child would still be regarded as an *ament* and not a *dement*. The *dements*, on the other hand, may have had normal potentials, and may have reached normal mental maturity — the brain cells may have been sound originally — but they have degenerated. Many *dements* deteriorate to the level of *aments*, and may possess about the same ability as an *ament* of the same intelligence level. Nevertheless, a *dement* should not be confounded with an *ament*. There is ordinarily a distinct difference between a *dement* and an *ament* even when the intelligence level is the same. The *ament* is usually good-natured, care-free, and confiding. The *dement* tends to be sullen and heavy. He loses his capability to feel, while the *ament's* capability to feel or to react to his feelings is not lost, although it may be temporarily diminished, exalted, or modified (J. S. Bolton). It has been affirmed that *dements* are very irregular or uneven in their mental make-up. We have found that *paretic* and *senile* *dements* and especially *epileptics* tend to scatter considerably over the Binet-Simon scale of tests. The Presseys found that the total irregularity for the twenty tests in the Yerkes-Bridges point scale, based on the scores for normal children of the same intelligence age, was twenty points for *dementia præcox* cases who were in the early stages of the disease, twenty-two points for deteriorated chronic alcoholics, as compared with seventeen points

for feeble-minded cases of the same intelligence ages. Based on five more highly differential tests (definitions of concrete and abstract words, absurdities, and disarranged sentences), the corresponding differences were 6.9, 8.2, and 4.7. J. N. Curtis, also F. L. Wells and C. M. Kelley, found that the scatter was slightly greater for paretics (whose insanity is due to syphilis) than for præcox cases, and slightly greater for the præcox than for the manic depressive cases, not all of whom, however, were deteriorated. Wrinkles frequently tend to furrow the brow of the dement, while the forehead of the ament may remain smooth until a late age, especially if he is of low intelligence.

(2) *Irremediability.* The mental defect must be incurable. A diagnosis of feeble-mindedness involves a prognosis of incurability. The restoration of a deficient to normality demonstrates that he was not mentally defective, but only temporarily retarded. There may be certain exceptions to this broad statement. If thyroid extract is administered early enough it may be possible to raise some cretins to mental normality whom we should be obliged to consider genuinely mentally defective before treatment and who would have continued as such without treatment. It may also be possible to restore active syphilitics, and epileptics whose mental impairment is due to the seizures. However, the writer has never known a feeble-minded child who was indubitably restored to complete normality, although many have been considerably improved.

But there are many grades of mental deficiency which are not remediable, although they do not constitute feeble-mindedness. Hence a third qualification must be added.

(3) *Gravity of deficiency.* The intelligence deficiency must be very serious. Exactly how serious must the defect be to constitute feeble-mindedness? A number of attempts have been made during the last thirteen years to formulate ar-

bitrary standards of intelligence deficiency by which to determine whether or not a person is feeble-minded. Four types of standards have been suggested:

(a) *Absolute amount of retardation in years.* Goddard, in 1910, proposed to call a child feeble-minded if "more than two years backward" by the 1908 Binet scale when "under nine years of age," and if "more than three years backward" when "above nine," subsequently modifying the standard so as to provide that a child who is four years or more backward in intelligence is "without doubt feeble-minded." E. A. Doll modified the formula slightly: "Feeble-mindedness is defined psychologically as intellectual retardation of two years at an age below nine or three years at an age above nine." No experimental evidence had been offered in proof of the correctness of these standards, but they hark back to a tentative basis for the preliminary selection of candidates for special classes suggested by Binet and Simon: "A retardation of three years indicates a child who should be regarded a suspect." "According to a convention accepted in Belgium, which we modify slightly, the retardation which determines a child as a defective is two years when the child is under nine, and three years when he is past his ninth birthday." Binet and Simon, however, took pains to point out that "these distinctions are pedagogical."

Criticism. Countless diagnoses of feeble-mindedness were made on the basis of these standards for years, but they have been largely abandoned, because they included many children in the feeble-minded category who could not be so diagnosed on the basis of the more decisive social criterion, and because the significance of a year of "intelligence retardation" varies with the etiological background and the complications accompanying each case and with the chronological age of the child. To overcome the latter defect a relative or fractional standard was suggested as early as

1910, which William Stern subsequently popularized under the designation "Intelligence Quotient" (I.Q.).

(b) *The Intelligence Quotient, Intelligence Ratio, or Mental Ratio.* The I.Q. is obtained by dividing the chronological age into the intelligence age as determined by the Binet-Simon or any other "test of intelligence," whether individual or group, or whether verbal, linguistic, mechanical, psychomotor, or social. An eight-year-old child with a test age of six has an I.Q. of 75, which indicates that he possesses seventy-five per cent of normal intelligence as determined by the test scale. The diagnosis of degree of mental inferiority by means of the I.Q. is very widespread at present. Stern, merely computing the quotients for a group of auxiliary-school pupils in Germany, tested and classified by some one else, suggested these diagnostic criteria: the "not abnormal," 81 to 90; morons, 71 to 80, and imbeciles, 61 to 70. Morons, according to Stern, possess a "three-quarters intelligence," and imbeciles a "scant 'two-thirds intelligence.'" L. M. Terman arbitrarily adopted a range of 10, 20, or 30 I.Q.'s for each category, and proposed the following I.Q. standards of diagnosis, based on the Stanford-Binet scale (but not derived from the actual clinical diagnosis of the children examined):

Above 140, "near" genius or genius.

120-140, very superior intelligence.

110-120, superior intelligence.

90-110, normal or average intelligence.

80- 90, dullness, rarely classifiable as feeble-mindedness.

70- 80, borderline deficiency, sometimes classifiable as dullness, often as feeble-mindedness.

Below 70, definite feeble-mindedness.

20 or 25-50, imbeciles.

Below 20 or 25, idiots.

Cyril Burt "has provisionally fixed" "the line of demarcation" "between normals and defectives" at an I.Q. of 70

"for children." For adults he apparently draws the line at 50. Below 50, he says, the case is an "institutional" one, and between 50 and 60 a "supervision" case.

The writer found the following I.Q. values for 411 consecutive children to whom the Stanford-Binet was given, whose diagnoses were based on all the facts gathered in the case histories:

TABLE 1. I.Q. VALUES FOR CHILDREN OF VARIOUS INTELLIGENCE CLASSIFICATIONS

CATEGORY	AVE. I.Q.	ME- DIAN I.Q.	MODAL I.Q.	EXTREME I.Q. RANGE	RANGE EX- CLUSIVE OF 25% of the EXTREME I.Q.'s
Normal.....	99	96		95 to 108	..
Retarded.....	90	92		80 to 97	86 to 94
Backward.....	80	81	82	59 to 94	74 to 87
Borderline.....	72	..	75	56 to 84	66 to 80
Potential feeble- minded.....	66	67	67	50 to 79	61 to 71
Borderline and poten- tial feeble-minded...	72	70		56 to 84	64 to 77
Deferred.....	71	75		39 to 95	55 to 92
Morons.....	60	61	65	48 to 70	53 to 66
Potential morons.....	58	59		43 to 69	51 to 65
Imbeciles.....	46	47.5	56	21 to 65	31 to 53
Imbeciles and poten- tial morons.....	52	54		21 to 69	40 to 62
Idiots.....	17	..		17	

Criticism. The I.Q. constitutes one item of considerable value in mental diagnosis, but it is subject to various limitations which cannot be considered here. They have already been discussed by the writer elsewhere. The attempt has been made all too frequently to diagnose mental capacity purely on the basis of the I.Q. and feeble-mindedness on the basis of an arbitrary and rigid I.Q. intelligence limen (for

example, a limen of 70). It is a mistake to attach undue significance to the I.Q. and to insist that it remains perfectly constant throughout the period of growth in practically all cases.

(c) *Maximum mental age level, or upper threshold of feeble-mindedness.* Goddard, in 1910, suggested that the highest grades of the feeble-minded reach an intelligence level of between twelve and thirteen by the 1908 scale. Diagnoses of mental deficiency among adults or older adolescents were for years almost universally based on this standard, to which, apparently, a few examiners still adhere, particularly examiners of delinquents. After attempting to follow this standard for a couple of years, the writer was led to reject it completely in 1912, and to draw the line between nine and ten. In a scrutiny of the literature he later found that this standard practically coincided with Binet's and Simon's. According to Stern, Binet held that the "moron" "does not progress" beyond the mental age of nine. Simon in 1915 wrote: "Provisionally it might be proposed to fix at nine years the upper level of mental debility." More recently Burt has proposed the "mental age of eight" as the line of demarcation between adult "normals and defectives," but he apparently considers this equivalent to "eight and a half or nine, according to earlier allocations" of the tests.

Evidence from army examinations. The intelligence examination of a million and three quarters of draftees in the late United States Army has thoroughly discredited the twelve-year standard of feeble-mindedness. The army results showed that the average intelligence age of the American soldiers, based on the transmutation of the Alpha scores into Stanford-Binet ages, was between thirteen and fourteen for the white men and about ten for the colored. Of the white draft, 47 per cent had an intelligence age of twelve and less, 30 per cent of eleven and less, 18 per cent of ten and less, 10

per cent of nine and less, and 5 per cent of eight and less. The corresponding figures for the colored soldiers were 89, 79, 64, 48, and 32 per cent. These figures bear out the conclusion reached independently of the army results and long before they were available, that the possession of a ten-year mentality almost constitutes proof positive that the individual is not feeble-minded (not a moron, although a dullard), however abnormal or anomalous he may be in other respects. In fact, it is now admitted that there are persons who do not reach a ten-year level by the verbal or linguistic intelligence tests (but who frequently reach a higher level in the "performance tests") who could not be diagnosed as feeble-minded from the social and industrial points of view.

(d) *Percentage definition.* It has been proposed to consider as feeble-minded a certain arbitrary proportion of those in the general population who rate the lowest in intelligence. R. Pintner and D. G. Paterson tentatively suggest 3 per cent, and the Presseys 2 or 3 per cent, as such a limiting figure, while J. B. Miner suggests one half of one per cent which, while more conservative, is still considerably higher than the ratio of 1 in 500 suggested in America several decades ago before the intelligence measurement scales came into vogue. In America the proportion among public school children has usually been placed at from 2 to 4 per cent. Burt includes the lowest 1.5 per cent of "the school population of the same age" in the London schools (who have a mental ratio of 69.4 and less), but this estimate is admittedly based purely on the circumstance that the London special schools at the time of the estimate provided accommodations for 1.5 per cent of the pupils in the schools within the eligible ages. After seven years of clinical study and administrative planning and supervision of special classes in the St. Louis public schools, the writer arrived at a more conservative estimate, namely, about one half of one per cent of the pupils enrolled

in the elementary grades. The ratio would, no doubt, have been slightly increased had the public schools enrolled all the mentally defective children in the city. Some were retained at home, some were excluded because of low mentality, while others were in the parochial schools. The proportion may be greater in other cities. It will be possible, as tests are perfected, to determine the percentage of pupils who are below a certain intelligence level in any school system, or the proportion in need of special instructional aid, but the number who are feeble-minded cannot be accurately determined by such expeditious or offhand methods.

4. **Socio-industrial definition.** From the social and industrial point of view a feeble-minded person is, in general, one who is socially inadequate or industrially incompetent or dependent. He does not fit into the social *milieu*, he is unable to meet the social demands, to conform to the conventions, customs, practices, laws, and moralities of the community. He is incapable of subsisting by his own unaided efforts, or of independently directing or managing his social and economic obligations. The definition as thus drawn, however, is too inclusive. A differential diagnosis is needed, because there are many reasons why people become social parasites. There are many types of social and industrial ne'er-do-wells. Certainly not all social or industrial inadequates are feeble-minded.

Types of social inadequates.

- (a) Some are criminalistically inclined, although of good or fair mental capacity. They may be impulsive, emotionally unstable, excitable, weak, indolent, hyper-suggestible, viciously inclined, depraved, lacking in moral stamina or ethical ideals, and the like.
- (b) Some are psychopathic or outspokenly psychotic. They may possess good mental capacity and adequate insight and comprehension of moral situations, but they are so emotionally, temperamentally, or volitionally unstable as

to be incapable of inhibiting their impulses and of controlling their conduct. Or they may be incapable of exercising such control because of mental derangement.

- (c) Some may be physically incapacitated — paralyzed, blind, deaf — and therefore unable to maintain themselves without external support.
- (d) Some may be immature. A five-year-old child cannot support himself although mentally normal or precocious.
- (e) Some may have demented to a state of dependency, having lost the capacities which they once possessed.

None of these types of socio-industrial disability would be due to mental deficiency, and must be excluded in the differential diagnosis. Only when the social inadequacy or industrial inefficiency is due to defect of intelligence from birth or from early life, should it be referred to as feeble-mindedness.

British statutory definitions. It was from the point of view of the basic social conception that the attempt was first made, by the Royal College of Physicians of London and the British Royal Commission on the Feeble-minded, to differentiate more sharply the different grades of the feeble-minded. The distinctions proposed by these bodies constitute the groundwork of the statutory definition of the different grades of the feeble-minded in England. According to the revised statement contained in the 1913 Mental Deficiency Act, which, in the main, marks an improvement on the earlier definitions, the different grades are defined as follows:

Idiots are "persons so deeply defective in mind from birth, or from an early age, as to be unable to guard themselves against common physical dangers." The criterion of idiocy is lack of the power of self-preservation. In other words, idiots, who do not develop beyond a mentality of two years in Binet's intelligence classification, are so gravely defective that they cannot guard themselves against ordinary dangers, and are wholly dependent economically.

Imbeciles are "persons in whose case there exists from birth or from an early age mental defectiveness not amounting to idiocy, yet so pronounced that they are incapable of managing themselves or their affairs, or, in the case of children, of being taught to do so" — even, we would add, under favorable circumstances. The imbeciles, who at maturity have a mentality of from three to seven years, as proposed by Binet, are capable of guarding themselves against "common physical dangers," according to the earlier definition, and are not wholly dependent. They can contribute a little toward their own support, but cannot support themselves even under favorable circumstances.

Morons,¹ who vary in intelligence age from seven (or, better still, six) to about nine, according to the conclusion reached on page 69, are "persons in whose case there exists from birth or from an early age mental defectiveness not amounting to imbecility, yet so pronounced that they require care, supervision, and control for their own protection or for the protection of others, or, in the case of children, that they, by reason of such defectiveness, appear to be permanently incapable of receiving proper benefit from the instruction in ordinary schools."

Criticism of traditional definition. The definition of feeble-mindedness as applied to children is faulty, as there are many children of borderline and backward grades of intelligence who cannot "receive proper benefit" from the regular grade instruction, but who cannot be classed as feeble-minded. The rest of the definition constitutes a marked improvement on the old form which is still widely followed, according to which a feeble-minded person is "one who is capable of earning a living under favorable circumstances,

¹ The word feeble-minded is used in the Mental Deficiency Act. The high-grade feeble-minded in England are called "feeble-minded" not only in the act, but in practically all of the scientific dissertations. This grade probably corresponds to morons in the restricted sense in which the word is employed in this book. Feeble-mindedness or mental deficiency in the United States applies to all grades of the feeble-minded, namely the idiots, imbeciles and morons. In England "mentally defective children" is the legal term applied to high-grade feeble-minded children (morons) under sixteen years of age who come under the special education act of 1899 (defective and epileptic children).

but is incapable, from mental defect existing from birth, or from an early age, (a) of competing on equal terms with his normal fellows; or (b) of managing himself and his affairs with ordinary prudence." There are two fatal defects in this definition. First, there is a multitude of persons who cannot compete "on equal terms with their normal fellows," who are not feeble-minded but merely backward. Second, the concept of "ordinary prudence" is unscientific and impracticably vague. There are many persons who, in the judgment of others, cannot manage their affairs with ordinary prudence who certainly are not sufficiently deficient to be classed as feeble-minded, but, who, in fact, may be quite intelligent. This definition emasculates the concept of feeble-mindedness, as it would be possible to class almost all kinds of social ne'er-do-wells as feeble-minded, as has, indeed, been done during the last thirteen years.

Essential criterion of feeble-mindedness. Waving all this aside, it cannot be too strongly emphasized that the cardinal ingredient in the concept of feeble-mindedness, as the word should be employed, is socio-industrial incompetency and dependency. No doubt many high-grade feeble-minded of the stable type possess sufficient capacity, stability, and dependability to get along in society and to maintain themselves if given a minimum amount of friendly supervision and control. But we agree with Tredgold that the term "feeble-mindedness" or "mental deficiency" "should be restricted to those persons who are so lacking in general mental capacity, in common sense, that they are incapable of subsisting by their own unaided efforts. . . . There are many individuals who, although scholastically dunces, have yet sufficient aptitudes of other kinds and, in particular, sufficient common sense, not only to take care of their interests, but to achieve a considerable degree of success in a humble walk of life."

5. **Eugenic definition.** Feeble-mindedness sometimes represents a condition of racial or biological inaptitude or eugenic unfitness. Some of the feeble-minded are produced by a cacogenic heredity, and some of them breed true; some transmit their strains to posterity; some cannot procreate a normal healthy progeny. The dysgenic effects are particularly evident when two feeble-minded persons mate. Although the marriage of all feeble-minded persons may not prove dysgenic — normal persons have been born of feeble-minded parents — the marriage of the feeble-minded should be strenuously interdicted, because they make inefficient, incompetent, and more or less irresponsible parents and bread-winners.

DEFINITION OF THE BACKWARD CHILD — THE DULLARD OR DULL NORMAL

There are children who, while not feeble-minded, are genuinely lacking in all-round mental capacity or ability, varying from a level practically indistinguishable from high-grade feeble-mindedness to a level almost indistinguishable from normality, and who are misfits in the regular grades. These children have been indifferently referred to as "backward" or "retarded" children, or "laggards," "dullards," or "dull normals."

Characteristics in school. Reports which the author has received and scrutinized from the teachers of thousands of such children indicate that they tend to be listless and inattentive, rapidly lose interest in the regular school work and fatigue easily, or rather grow weary rapidly, obviously because of lack of interest in the subject-matter which is frequently incomprehensible and does not appeal to them. They are often prone to attacks of stubbornness, irritability, and bad temper, and suffer from a certain degree of moral obliquity or obtuseness. Backward children, more fre-

quently than the feeble-minded, are the disciplinary bugbears of the teacher, and frequently of the other pupils, especially the smaller ones, whom they tease and bully.

Conduct disorders among backward children. In Karl Pearson's study of intelligent, dull, robust, and delicate children among the English professional classes, it was found that the intelligent children were far more conscientious and far less surly, and usually possessed greater athletic power and more robustness than the dull ones, while the delicate ones were below the average in intelligence. He concluded that there was a close connection between intelligence, morality, and physical robustness. As a result of the clinical study of delinquent and troublesome children in the St. Louis schools, the writer concluded that "it is particularly the backward pupil who creates the problems of discipline in the schools," who is "a more aggressive and intelligent trouble-maker, and constitutes potentially a greater criminal menace" than the feeble-minded child. Only 10.8 per cent of boys admitted in rotation to a class for truant, refractory, or incorrigible boys were diagnosed as feeble-minded, compared with 65 per cent who were diagnosed as dullards (of borderline and backward grades of intelligence). Of 444 children with a record of misconduct, usually of a less grave form, 24.3 per cent were diagnosed as feeble-minded and 62.4 per cent as borderline and backward, as compared with 35.7 per cent feeble-minded, and 53.3 per cent borderline and backward for the entire block of 2774 consecutive cases, most of them reported because of suspected mental deficiency or inferiority. (See Table 3, in the Appendix.) A similar conclusion has recently been reached by S. D. Porteus, who made a study of inmates in an institution for the feeble-minded. Of 377 classified as feeble-minded (all with an I.Q. below 75), 64 per cent were well-adjusted, and only 13 per cent had delinquent tendencies.

Only 6.3 per cent of those with I.Q.'s below 55 were delinquent. On the other hand, only 33.3 per cent of 87 dull normals were well-adjusted, while 49.4 per cent showed delinquent tendencies. "This shows that it takes a certain amount of intelligence to get into serious mischief."

Misbehavior and vocational incompetency due to maladjusted curriculum. Undoubtedly much of the misbehavior of backward children in school is directly attributable to their lack of interest in, or ability to do the work required in the regular curriculum. Frequently, when such children have been transferred to the proper kind of special class, the misbehavior has ceased. It would be easy to cite hundreds of specific instances in point.

The ordinary school work is maladjusted to the capacities, interests, and needs of a large proportion of these children. It does not adequately prepare them for the most important responsibility confronting them after leaving school, namely, the making of a living by the skillful employment of the powers and capacities which they possess. It does not afford sufficient training, or the right kind of training, for the proper development of these powers. And so we frequently find that many of the dullards in school later gravitate toward the ranks of the social and industrial incompetents and malefactors, the vagrants, hoboese, paupers, inebriates, criminals, and prostitutes. Apparently a much larger proportion of industrial turnover or economic failure is due to mental or educational incompetency and lack of trained skill in craft work than to physical inefficiency or weakness. One industrial establishment discharged 80 per cent of its hired men within four months as "mentally" incompetent. One insurance company which requires a passing grade of 75 per cent for its higher positions, found that 60 per cent of 1443 applicants failed on the mental tests and only 26 per cent of 1125 applicants on the physical

tests. Undoubtedly a considerable part of industrial incompetency is due to the attempt of the schools to force all children into a common mould instead of supplying appropriate manual and vocational training, especially for those of inferior endowment. Of 865 inebriate women committed to the English inebriate reformatories during a two-year period for notorious inebriety, frequently in association with immorality (they are only committed to the Government reformatories after four prior convictions), 64 per cent were estimated to be defective in mentality (defective, very defective, dull, silly, senile, insane), while only 3.9 per cent had a superior education, 52 per cent could read only imperfectly, and 13 per cent could neither read nor write. On the other hand, 64 per cent were physically "fit" for doing hard work.

The lack of proper industrial and vocational training, however, is probably responsible for more industrial failures than a low intelligence level.

The intelligence level of 154 "migrating unemployed" men, many of whom were tramps or hoboes by profession, given the Stanford-Binet by H. E. Knollin, varied from seven to eighteen years, the median intelligence age and I.Q. being, 14.1, and 89, respectively. The lowest 25 per cent were below 12.6 and 79, while the highest 25 per cent were above 15.6 and 98. Five and two tenths per cent tested below ten years, and 8.4 per cent below eleven years, the corresponding figures for G. R. Johnson's 107 destitute men, selected at random from those aided by social service organizations, being 5.5 per cent and 12 per cent. The median intelligence level for both groups was 14.2, and the I.Q. 89. The medians for both groups (14.2 and 89, respectively) exceeded the medians for street-car men, salesgirls, and civil service applicants, but were considerably lower than the medians for business men and railroad engineers.

Less effort has been made to formulate a satisfactory defi-

dition of the backward than of the feeble-minded child. But, although we may not be able to offer a rigidly scientific or exact definition, the concept of the backward child is entirely justified. There are subaverage children who are not feeble-minded. Recognizing the necessary ambiguity of any attempt at scientific definition under present limitations of knowledge, we shall merely suggest certain criteria from the standpoints considered in defining the feeble-minded.

1. **Psychologically.** Backward children, psychologically, are more or less deficient in all-round mental (intellectual) capacity, ranging for grade children from about a year to three or four years, depending upon the age of the child. In terms of I.Q. Terman places the "borderline" between 70 and 80 (some of these, however, being considered feeble-minded), and the "dull" between 80 and 90. Burt considers all below 85 I.Q. as backward, but he apparently regards educational attainments chiefly in arriving at a diagnosis. In my diagnostic classification the average years of retardation based on the Stanford-Binet in a block of 411 consecutive examinees was 3.04 years for the borderline and 2.19 years for the backward, the average chronological age of the former being 11.03, and of the latter 11.16. The average I.Q. for the borderline was 72 and for the backward 80. But the range for each category was very large, as shown in Table I.

Let us again emphasize that the diagnosis cannot be made purely on the basis of the I.Q. Consideration must be given to the nature of the causative factors, the degree of motivation or effort put forth, and the degree of improvability. In theory my "retarded" group is restricted to the restorable cases, and the backward to the improvable but not completely restorable. But this difference does not always obtain in fact, for some backward cases in the end prove to be

restorable, while some retarded fail to reach the normal standard. However, this is merely conceding that errors of diagnosis are not unavoidable.

There are other children who are merely specifically deficient — in some form of memory, imagination, attention, speed of forming associations, etc. It seems inadvisable to classify such children as backward if they are normal except for a specific handicap.

2. Educationally. A child may be specifically or generically, and permanently or temporarily (or inherently or accidentally) pedagogically backward. Burt classifies as backward any child of eleven or above who is three years below standard, and any child of ten or less who is two years below standard. The A.Q.¹ ("accomplishment quotient" or "achievement quotient") has been suggested as a device for determining whether the child's educational attainment is equal to his mental capacity. The A.Q. is obtained by dividing the intelligence age (as determined by some "intelligence test") into the educational age (obtained from translating scores in educational tests into age equivalents). Thus an intelligence age of twelve, and an educational age of eleven, giving an A.Q. of 92, would show that the child is accomplishing eight per cent less than normal for this intelligence age. An A.Q. of 100 indicates that the pupil has accomplished exactly as much as the average of the pupils of his intelligence age, and an A.Q. of 120, twenty per cent more than the average pupil of his intelligence age.

Restricted use of term. We arbitrarily limit the application of the term "pedagogically or educationally backward" to the child who is more or less all-round backward through inherent lack of ability, and who is in need of full-time in-

¹ In addition to the I.Q. (see p. 67) and A.Q., the E.Q. ("educational quotient") has been proposed. It is obtained by dividing the chronological age into the educational age.

struction in an ungraded class (but not a special school for the feeble-minded). This type of child is unable to make normal progress in school (perhaps only from 35 or 40 per cent, to 75 or 85 per cent of normal progress) after an adequate period of legitimate probation: that is, regular attendance, proper classification, skilled instruction, adequate motivation, diligent application, and satisfactory physical health. Some of these children possess sufficient pedagogical potentials to reach third grade, some can reach fourth grade, some fifth grade, while others will advance even higher.

Differential diagnosis. In this definition we aim to exclude: (a) children who possess fair or good all-round ability or intelligence, but who are specifically deficient in only one or two branches (or in the mental traits on which success in such branches depends) — for example, reading or arithmetic — and who are in need of special aid in their weak branches. These children might be assigned to special sections in those branches, but do not require full-time assignment to an ungraded class. Most children are not equally capable in all arts, sciences, and handicrafts; indeed many persons, even those conspicuously well-endowed in general, are deficient in some type of subject-matter. (b) Children who are educationally retarded merely because of unfavorable extrinsic factors: lack of a cultural environment, neglect, abuse, absence from school, frequent transfers, lack of interest, application, and willingness to learn, and poor teaching. Such children may be brought up to grade if given adequate skilled instruction in time. If neglected too long, their potentials will probably remain undeveloped or will stagnate or undergo “functional atrophy” so that they will, to all intents, be like the child who is genuinely deficient in inherent capacity.

3. **Anatomically.** Anatomically there are two distinguishable types of backwardness, the one due to hampering

physical defects — such as defective nutrition, obstructed breathing, auto-intoxication, diseased caries — and the other due to a certain amount of deficiency in the cellular tissue of the brain. It is probable that the cerebral neurones are not so sensitive or so finely organized in the brains of most children who are genuinely backward.

4. **Socio-industrially.** The backward child has sufficient capacity not only to make his way in the world, but to attain considerable success in many trades and handicrafts, and in many vocations in which he possesses special aptitudes, and will attain such success if given proper vocational training in school in correlation with the literary work, provided he is not handicapped by hampering temperamental, emotional, volitional, and moral abnormalities. He is potentially capable of self-maintenance, self-management, and self-determination.

5. **Eugenically.** There is a type of backwardness which is due to cacogenic heredity, and is transmissible just as is feeble-mindedness, insanity, epilepsy, or any other heritable neuropathic condition. The laws of heredity, whatever they are, are the same for all types and grades of human beings. Acquired forms of backwardness that are due to various kinds of destructive environmental forces are not transmitted unless the germ plasm has been modified. The latest evidence points to the fact that such modification is possible by so-called blastophthoric agencies, but this is a moot question which has been examined in *Causative Factors of Mental Inferiority and the Prevention of Degeneracy*, and will again be considered in another connection.

DIFFERENCE BETWEEN THE FEEBLE-MINDED AND THE BACKWARD

What, then, are the differences between the feeble-minded and the backward? (1) From the point of view of the char-

acter of the mental defect, the difference is primarily quantitative. The feeble-minded possess the same outline of mental functions, but the functions are less highly developed or organized, or they are more seriously impaired or crippled. The feeble-minded simply form the fag-end of the curve of distribution. (2) From the point of view of curability, genuine feeble-mindedness is ineradicable (with possibly insignificant exceptions) and can only be ameliorated or mitigated by appropriate educational and social training and hygienic care. In the case of backwardness, the outcome depends entirely upon the type of deficiency. If there is grave deficiency or imperfection in the cellular organization of the brain, the defect probably can never be wholly effaced or overcome. There will probably be a gulf between the mind of such a backward child and that of a normal child which can never be wholly bridged by hygiene, medication, or education. And yet, these children can be improved far more than the feeble-minded by systematic exercise of the sensori-motor and intellectual functions, by literary and craft training, and by proper hygienic care. If the backwardness is due to educational and social neglect it can sometimes be entirely overcome by appropriate instruction and training, if given in time. Children who are backward because of ill-health, disease, hampering physical defects and physical abuses (indulgence in alcohol, tobacco, and other injurious practices), may sometimes be restored to complete normality by the improvement of the physical condition through the application of the proper remedies and corrective treatment. Some writers, however, believe that the orthophrenic (mentally ameliorative) effect of the removal of physical defects has been exaggerated (for example, H. Woodrow, L. S. Hollingworth, Margaret C. Rogers).

Rogers measured the height, weight, dynamometry, speed of tapping and the intelligence (I.Q.) of a test group of boys

who had had their adenoids and tonsils removed, and an unoperated control group of corresponding intelligence and nasopharyngeal condition. The terminal measurements, given about a year after the operations, showed that the relative improvement of the operated cases was greater only in weight and speed of tapping. Since the increase in the I.Q. was not greater for the operated than for the non-operated cases, and since the distribution of I.Q.'s was the same for a larger group of tonsil cases as for a group of non-tonsil cases, she concludes that adenoids and enlarged tonsils do not cause mental retardation, although granting, apparently, that they may affect the child's educational efficiency.

During the course of a calendar year in 1910 and 1911, W. G. Ebersole and the writer carried out an experiment, under the auspices of the Oral Hygiene Committee of the National Dental Association, in which a squad of twenty-seven school children suffering from diseased dentures and gums, an insanitary oral cavity, and frequently from defective nutrition, were given appropriate dental treatment, including fillings, extractions, treatment of the gums, demonstrations in brushing the teeth and gums, and instruction regarding the sanitation of the oral cavity and insalivation and mastication of food. Two demonstration meals were arranged to demonstrate correct eating habits. The results of the treatment were checked by physical reexaminations, detailed reports by the nurse, teachers, and principal of the school, and by the results of five sets of group psychological tests arranged in six series, two of which were given before treatment was begun, two during its course, and two after its termination. The two terminal tests were given almost a year after the first two. Many of the children improved notably during the year in physical condition, scholarship, conduct, and in the performance in the psychological tests. "Most of the members of this experimental squad were lag-

gards and repeaters, pedagogically retarded from one to four years in their school work, but during the experimental year only one pupil failed of promotion, while six did thirty-eight weeks of work in twenty-four weeks, and one boy finished two years of work within the experimental year." In the psychological tests the post-treatment scores were 57 per cent higher than the pre-treatment scores. Owing to the impossibility of testing a parallel control squad, which the writer tried in vain to organize, it cannot be determined with exactitude what proportion of the improvement in the psychological tests should be ascribed to the factors of familiarity, practice and increased maturity, and what proportion to the improved physical condition and working efficiency of the pupils. But there can be little doubt that much of the heightened efficiency evidenced was directly due to the oral treatment and hygienic regimen carried out during the year. H. A. Cotton has more recently emphasized the causal relationship between foci of infection (many originating from diseased teeth and tonsils) and various mental disorders, and the possibility of curing the latter by the removal of the infection. The removal of fears, "nervous dread," obsessions, superstitions, habit fixations, emotional conflicts or upheavals, and infantile fixations and inhibitions from so-called submerged complexes, or from other sources, may enable the minds of some backward children to function normally. Moreover, it is probable that some children who "naturally" develop at a retarded rate may eventually "catch up" and reach the normal standard.

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PART II

PUBLIC SCHOOL QUESTIONS RELATING TO THE EDUCATION OF HANDICAPPED CHILDREN



CHAPTER IV

DIFFERENTIAL EDUCATION, ITS JUSTIFICATION AND PRINCIPLES

THE SCIENTIFIC PRESUPPOSITION OF THE THEORY OF DIFFERENTIAL EDUCATION

THE theory of differential education, as well as its justification, rests upon two basic orders of demonstrable facts: first, the fact that large individual differences exist in the original and acquired nature of children and in the rate of the growth and development of their various powers and capacities, as instanced briefly on page 32; and second, the fact that children who exhibit certain well-defined kinds and degrees of specific or generic differences require special physical and hygienic treatment or educational training, either because the ordinary treatment does not eradicate or adequately ameliorate the handicaps, or because it does not furnish sufficient opportunity for the more positive development of the children's special capacities. There are educators of distinction who accept the first of the above premises, but not the second. They accept the fact of individual differences, but not the educational consequences deduced therefrom. They are of opinion that the differences are in large measure eradicable, and can be leveled or attenuated by a common process of educational treatment. They believe that the best interests of a democracy demand that at least all the children in the grades (excepting only the most extreme deviates) should be required to pursue a course of study which is uniform in its cultural and literary ingredients, and that only thus will it be possible to elevate the cultural and intellectual level of the mass of people of the

nation — a result devoutly to be desired in a country in which the rank and file must be trained to actively coöperate and participate in the processes and functions of government. While there is much to be said in favor of such a view, which has been eloquently championed by W. G. Bagley, most authorities are convinced that the educational needs of children whose deviations or abnormalities exceed a certain point cannot be adequately met by the methods and contents of the regular elementary curriculum, and that they cannot receive the amount of attention they require from the regular grade teachers. The author has been constrained to accept this view after nearly a decade and a half of well-nigh daily observation and clinical examination of, and first-hand contact with, a great variety of pathological, abnormal, or anomalous children, in clinics and in institutional and public school systems.

REASONS FOR TRAINING MENTALLY DEFICIENT AND SERIOUSLY BACKWARD CHILDREN IN SPECIAL AND UNGRADED CLASSES

The reasons which have led to the conclusion that at least the mentally deficient and the seriously backward should receive appropriate instruction in special classes seem quite convincing, if not irrefutable. The following are some of the more cogent arguments in support of such a conclusion.

1. Benefits which accrue to the regular grades and the normal pupils from the removal of the subnormals. In the regular grades the feeble-minded and subnormal represent, as it were, an unassimilable accumulation of human clinkers, ballast, driftwood, or derelicts which seriously retards the rate of progress of the entire class and which often constitutes a positive irritant to the teacher and other pupils. Unable to meet the standard requirements and incapable of

grasping subject-matter which frequently is quite incomprehensible to their limited powers of understanding, these pupils contract habits of inattention, indolence, and disobedience, and often, in consequence, become unruly or ungovernable, thus upsetting the discipline of the whole class, and setting very bad examples for the other pupils to imitate. In obstructing the progress of the class, they make it difficult for the normal pupils to work at a healthy tension: "strength comes from wrestling," and not from languid, indifferent exertion. To attempt to provide a uniform course of study in the regular grades for children who may vary from imbecility to potential genius is like using a plow horse as a stimulus horse in training for a race, or like hitching a draft horse to a race horse and expecting them to win the contest. Many subnormal children will require three or four times as much attention as normal children, and even then will not receive in the regular grades the type of training adapted to their limitations. If the subnormals were given all the time they require in the regular grades, the normal and bright pupils would have to be neglected. This would seem like robbing bright Peter to pay dull Paul. After all, may not our highest obligation be to the great mass of normal and bright children, who are destined to become the leaders or organizers or the great balancing or leveling force of society? By removing the "clinkers" and the "drags" the regular grades will be thrown open to the normal progress pupils, thereby enabling these pupils to advance more rapidly, and materially reducing the extent of pedagogical retardation.

This constitutes one of the strongest practical arguments in favor of the policy of organizing separate classes for children who cannot possibly keep up with the pace of the regular grades, and who serve as a brake on the progress of normal children.

The special classes are a decided benefit to the normal pupils.

2. **Benefits which directly accrue to the deficient themselves.** In the special classes deficient children are relieved of the chief sources of their past discouragement and embitterment. They are relieved of the disheartening, cruel, and unjust competition with their superior fellows, with whose pace they cannot possibly keep up, and from the feeling of inferiority which inevitably ensues when the child is sufficiently intelligent to realize his handicap. It is believed that the feeling of inferiority thus engendered may lead to repressions, conflicts, breakdowns, or compensations. They also escape from the taunts, jeers, jokes, and gibes sometimes suffered at the hands of their normal playfellows because of their patent stupidity in the lessons, the tendency of which is to engender an attitude of cynicism, malevolence, and defiance. In the special class, if the proper *esprit de corps* has been established, they will encounter an atmosphere of mutual understanding, helpfulness, and sympathy. What are some of the specific values of the special class régime?

(1) They will receive more aid and encouragement, and little scorn or ridicule from comrades who are similarly afflicted. They will be stimulated by the modest successes of their likes to put forth their best efforts, instead of being discouraged by the brilliant achievements of pupils with whom they can never hope to compete, no matter how hard they may try. Subnormals are not incapable of making elementary logical inductions. I have heard many subnormals in the specials remark: "If John has learned to do this, I can do it too. I'm going to try." The old trite saw is quite applicable to subnormals also: "Nothing succeeds like success" — provided the success is recognized as attainable.

(2) In the special class they receive aid and encouragement from a specially trained and sympathetic teacher who

understands their limitations, takes a personal interest in each child, makes each one feel that he is an object of solicitude, and who has the time and the patience to minister to the peculiar needs of each member of the class. In the regular grades the pupils have not always been understood and frequently have been neglected, reprov'd, or punished by teachers who, with forty or fifty pupils under their tutelage, could not give them needed attention and who may have grown rather indifferent, cold, or harsh toward them when they have become "unmitigated nuisances," impeding the progress and upsetting the discipline of the class. This deplorable situation, however, is less an indictment of the teacher than of the impossible demand not infrequently made that the teacher must educate "all the children of all the people" in the same class.

(3) In the properly organized special class, the pupils are also relieved of a maladjusted curriculum which they cannot master. The fruitless attempt to master the regular curriculum has often led to dire consequences. It has developed the habit of failure, undermined the pupils' confidence in themselves, and perhaps established the conviction that they cannot do anything well or worth while and are inevitably doomed to ultimate failure. In the special class they are provided with a course of training which appeals to them, in which they can achieve a considerable measure of success, and which will fit them for some useful pursuit after leaving school.

In point of fact, nearly all subnormal children quickly begin to respond, both in scholarship and conduct, under the helpful, sympathetic atmosphere of the special-class regimen, and much prefer the special class to the regular grade, provided they have not been adversely influenced by parents or others who taunt them because they have been assigned to the special, or because they want them returned to the grades.

Therefore, to be forced to remain in the regular grades is an injustice to the deficient child himself, if he is obviously incapable of receiving proper benefit from the grade instruction.

3. Benefits which accrue to the regular grade teachers. The removal of the laggards will relieve the grade teacher of her greatest source of worry, discouragement, and nervous tension, namely the pupils who hold back, and often disorganize, the class. The mischievous laggard is frequently the disciplinary bugaboo of the class, and may cause more trouble than all of the other pupils in the room.

4. Benefits which accrue to society. To provide special classes for the serious deficient is an economic measure in that it will accelerate the progress of the normal pupils, or enable them to pursue an enriched course of study; it will avoid repetition of types of instruction which the subnormal cannot master; and it will make possible the substitution of three or four normal children for every feeble-minded child who is transferred without augmenting the teaching load in the grades, thereby partially offsetting the larger expense of the special class. If allowed to remain in the grades, the serious deficient would merely vegetate. I have known many who spent six or eight years repeating the work of the primary grades, and then did not receive the training they needed. It did not give them the best preparation for the type of service they were called upon to do after leaving school. In a district with 13,466 pupils, 490 had failed four times, 266 five times, 162 six times, 67 seven times, and 80 eight times, as reported by David Mitchell. The expenditure for repeated instruction amounted to \$265,000. The transfer of the subnormal child to the special school will not avert the necessity for all repetition, but it is certainly more profitable to drill him on processes which he can master than on subject-matter beyond his ken.

From the point of view of social and vocational returns the special classes are an economic investment to society.

5. **Benefits which accrue to the science of education from the scientific study and training of deficient.** The sequestration of certain children in special classes has proved a powerful provocative of the wider scientific study of the causes, nature, diagnosis, treatment, training, and care of handicapped children, of the organization and administration of special classes, and of the preparation needed by special class teachers. As already remarked, it is directly responsible for the development and application of standardized psychological and educational tests. Nearly all the benefits from these diverse studies have inured to the good of all types of normal and abnormal children. We are now studying individual differences among all types of children by methods devised in the study of the feeble-minded. The pupil material in the schools is now studied somewhat as patients are studied in the hospitals. The teaching methods devised and extensively used in the classes for the mentally defective have found increasing application to the normals; for example, the value of expression versus impression, motor training, manual training, sloyd, the employment of concrete, objective methods of presentation, physical training, and the adaptation of the methods, devices, and contents of instruction to the needs of the individual pupil.

All of the above arguments apply, in varying degree, to the necessity of establishing other types of special classes, such as classes for the blind, the deaf, or the crippled.

THE PARAMOUNT NECESSITY OF MAKING ADEQUATE EDUCATIONAL DIFFERENTIATIONS

Having thus stressed the necessity of organizing special classes for unusual children, we hasten to express the belief that children ought not to be differentiated at all for pur-

poses of instruction unless the differentiation is carried to the point where not only the general needs of the children will be better met in special classes than is possible in the regular grades, but where their peculiar specific needs will receive the best developmental and corrective training known to modern science. To make the special classes for the "feeble-minded," as has often been done, a clearing house or a dumping ground, or a catchall for all types of educational ne'er-do-wells, may be beneficial in relieving the normal grades of a mass of hampering flotsam and jetsam, but it may not greatly benefit the children who are transferred, in fact it might prove a positive detriment.

Assigning the non-feeble-minded to classes for the feeble-minded. It constitutes a grave injustice, educationally and socially considered, to compel speech-defective, blind, semi-sighted, deaf, hard-of-hearing, word-blind, paralytic, or delinquent children who are merely backward and not feeble-minded, or pedagogically retarded children of normal mentality, to spend their school days in classes for the feeble-minded, as has to our knowledge not infrequently been done. The progress of such children in the literary subject-matter in the special classes will inevitably be retarded by the slow pace of the feeble-minded. If the instruction is suited to the needs of the feeble-minded, which will be the inevitable tendency if the classes contain a preponderance of such pupils, it will not suit the needs of the children who possess fair or normal intelligence, or whose defects are markedly different. Pupils whom the writer has transferred to ungraded classes from the special schools, where they would have stagnated in the fourth or fifth grades, have completed the grades, and, in some cases, entered the high school.

Assignment of the feeble-minded to backward classes. A parallel difficulty ensues when feeble-minded children are assigned to classes for the merely backward. If the work

is adapted to the needs of the backward, it will not fit the feeble-minded. The latter will be given too much literary work and not enough manumetal. It is evident that if pedagogical misfits are indiscriminately assigned to special classes, the difficulties which existed in the grades will recur except that there will be fewer pupils to the class. Therefore I voice the earnest plea that care be taken in classifying children for differential instruction to restrict each grouping to children who are subject to approximately similar deviations or defects and who require approximately similar training. The differentiations must be much more finely drawn than the practice now in vogue in most school systems.

Principles of educational differentiation. Is it possible to formulate principles of educational differentiation to guide in the selection of children for different types of special classes or for providing special aid, which can be clearly stated and which can be applied successfully in practice, and which will result in the organization of flexible, adjustable systems of special classes and schemes for providing special assistance for deficient, retarded, or defective pupils enrolled in the elementary grades? Two basic principles have gradually emerged from the author's practical experience in administering systems of special classes for deficient children and in examining abnormal types of children from schools and institutions. These principles represent conservative, defensible formulations, a middle ground between those who would abolish nearly all special classes and those who would assign one fourth or one fifth of all the elementary pupils to special classes or special divisions for subaverage children.¹

¹ In a book on deficient children it is not to be expected that we should enter into a discussion of the educational requirements of superior or super-normal children. The writer, whose first-hand experience with this type is less extensive, considers that this problem is much more complex and involved. The educational needs of the deaf have been studied since 1620 and of the feeble-minded since about 1800, but the study of the pedagogy of the

First basic principle. I shall first state this principle in accordance with traditional belief and practice, including my own practice in past years, and then note certain exceptions or reservations which I deem essential in order to safeguard the best interests of the children.

The principle has won wide acceptance that all children who are trainable but so defective mentally or physically that they are incapable of being trained for self-support, self-control, or independent existence under the conditions obtaining in the locality in which they reside, should be assigned on full time as early as discovered to appropriate special public school classes or schools for types of training which will maximally overcome their specific handicaps, or, when the handicaps cannot be ameliorated or overcome, which will maximally develop not only their special talents, but also the morale needed to overcome the personality defects from which many suffer.

Institutional care as a necessary corollary. A complementary principle which may be stated in this connection is that children who are not properly controlled, protected, and supported at home should be placed under guardianship or in a residential institution (in which at least the educational work is under the supervision of the state department of education), either before or after receiving training in the special classes of the public schools, and either temporarily or permanently, according to the exigencies of each case.

Waving aside such exceptions, we hold that the primary obligation for educating mental defectives devolves upon the public schools, not only because the limited accommodations now afforded by the residential institutions, and which

supernormal has scarcely begun. Moreover, it is easier to differentiate and grade the restricted mind of the subnormal than the infinitely complex and subtle mental mechanism of the brilliant or precocious (certainly by investigators who may be less brilliant than the pupils).

can be afforded for a long time to come, will make it altogether impossible to admit but a small proportion of mentally defective children, but also because the needed educational training can be supplied more economically in the public day classes than in the residential institutions, where the children would have to be housed and fed. The State should not be required to assume the support of children whom the parents are financially able, socially competent, and willing to rear. To advocate the removal of defective children from good, responsible homes which are providing adequate care, notwithstanding the parents' protests, is to indulge in preposterous visions, even when the purpose is laudable. Moreover, it frequently requires a long time to determine whether an alleged mentally defective child is actually defective.

Objections to the first basic principle as formulated. While many school systems, notably the St. Louis schools, have for years successfully conducted systems of special classes or schools intended exclusively for "mentally defective" children as the term is usually understood, valid objections may be made to the basis of differentiation postulated in the first principle. It may be urged that it is not the function of the public schools to attempt to determine what children will or will not prove to be self-supporting, or should or should not be committed to institutions, or to differentiate the instruction or classify or group the children according as they are adjudged to be institutional or non-institutional cases. The difficulties of attempting to do this are quite insurmountable, as there is considerable lack of agreement regarding the exact definition of feeble-mindedness. The upper limit for the highest grades has been variously placed at a level of from eight to twelve years, or an I.Q. of from 50 to 80, on the basis of the results of so-called intelligence tests, while the ratio of children estimated to be feeble-minded on such standards has varied from less than one half of one per

cent to about five per cent. Nor is it possible to determine whether many of the children will in fact prove to be feeble-minded until they have been afforded adequate opportunities for industrial arts and vocational training in the schools and sometimes until they have had a sufficient period of probationary trial at various jobs after leaving school. On the other hand, it does not require a very long period of observation and examination by present methods to determine whether or not the child is in need of special aid and instruction. The supplying of such instruction should not be held in abeyance pending the decision as to whether or not the child will prove to be feeble-minded, in the social and legal connotation of the term. The business of the schools is relatively simple and direct, namely, to discover the children who need special instruction, and to classify, group, or assign, and to reclassify or reassign the children as efficiently as can be done in the light of their educational needs as they become apparent from time to time.

The primary concern of the schools is to effect groupings which will maximally serve the present needs of the members of the group. This, however, can only be effectively done when children are placed in the same group who are subject to about the same degree of deficiency or the same kind of defect, and who therefore require approximately the same kind of training or treatment. The very aim of the grouping will be defeated by admitting all grades of retarded children into the same class.

This makes it necessary to draw a line somewhere. As already indicated, the practice has been to restrict one type of class to "feeble-minded," "mentally defective," "defective," "imbecilic" or "moronic" children, who are regarded as socially and industrially incompetent and subject to legal certification and commitment to an institution for the

feeble-minded. It is unfortunate that these words as applied to special class children should have acquired these implications, and it would be highly desirable to use a substitute term. But it is not probable that this will be done soon because of the persistence of habit and tradition, and because of the abiding interest in "feeble-minded," "mentally defective," and "defective" children which has been aroused by decades of propaganda, advantage of which may be taken in conducting "drives" for the establishment of special classes for mentally handicapped children and securing educational legislation in their behalf. We cannot, unfortunately, escape the necessity of applying some sort of designation to the most backward or deficient children selected for the special classes. But if the term "mentally defective" or "feeble-minded" is applied to children assigned to the special schools for the most deficient, care should be taken to use the words only in the psychological and educational sense.

In Part II of this book I shall limit the application of the term "feeble-minded" or "mentally defective" children to the educational and psychological connotations given on pages 61-70, and to those qualifying for special classes under the standards laid down on page 130. No assumption will, therefore, be made that such children are feeble-minded or mentally defective in the social sense, although, of course, many, perhaps most, of the children assigned to the special classes under the recommendations made in this part of the book will, in point of fact, prove to be so. I shall, however, give preference to the use of the terms "mental deficiency" and "mentally deficient children." These terms are not ordinarily used as equivalents of mental defectiveness or mentally defective children, although many so classified will prove to be feeble-minded. "Mental deficiency" will be synonymous with "mental defectiveness"

in the psychological and educational sense. Some of the children admitted as mentally deficient to the special classes, even under the very conservative admission standards recommended in Chapter VI, will, in the end, prove not to be socially and industrially feeble-minded. I shall use the term "defectives" or "defective children" as a generic designation for the physically defective and the mentally deficient.

Second basic principle. The second principle is that the less gravely defective or deficient or handicapped children who are trainable for independent existence in society, but who are incapable, temporarily or permanently, of successfully coping with the requirements of the regular grades, or whose special needs cannot be met by the ordinary instruction — and this includes the large majority of handicapped children — should be assigned on full or part time to special classes, groups, divisions, or courses, either for differential, corrective training, or for coaching or special aid in the regular program of studies. Children so assigned who possess the potentials for restoration or rehabilitation should be returned to the regular grades as soon as possible, while the others should continue in the special classes or receive such special aid as may best serve their individual requirements.

GENERAL CONSIDERATIONS TO BE FOLLOWED IN THE ESTABLISHMENT OF VARIOUS KINDS OF SPECIAL CLASSES

In the remainder of this chapter we shall indicate certain subsidiary principles or rules which should be followed in the organization of all kinds of special classes, and in the following chapters emphasize certain technical requirements and facts which should be observed in the establishment, organization, and conduct of classes for children who are subject to orthopedic, visual, auditory, speech, conduct, and

mental defects, especially the mentally deficient and backward.¹

Admission procedure. No child should be assigned on full time to a special class (except as hereinafter noted) without being properly certified by a constituted official after an adequate examination, the detailed character and extent of which will vary with the nature of the case. A measurably complete examination, which many will require, should include a physical, psychological, and educational examination, and a "history of the case"; that is, an investigation of the genetic and etiological background of the disability, including an inquiry into the family history, the child's developmental history (physical, psychological, social, and educational), and the influencing factors from the home and neighborhood environments. Group and individual tests of verbal intelligence and psycho-motor and performance ability are of great value, but too much dependence must not be placed on mere test findings and test scores, particularly when based on group tests. Group tests are subject to many sources of error which cannot be readily controlled. The proper diagnosis of educationally deviating children requires the services of experts who know how to interpret and apply test results from a rich background of technical knowledge and first-hand experience with a great variety of types of educationally and mentally abnormal children. Such knowledge cannot be secured merely by studying tests and test results, and mastering the technique of administering tests. If it be thought that this requirement is unnecessarily exacting, let it be emphasized that the schools cannot permit the child's future to be jeopardized through avoidable bungling during the initial procedure. Careful preliminary examinations by properly

¹ Classes for the cardiac, tubercular, pretubercular, neurotic, and word-blind will not be considered.

qualified authorities will obviate many mistaken assignments. The practice of requiring examinations preliminary to transfer is becoming widespread. To the writer's inquiry in the fall of 1913, all of 103 cities, except two, supporting special classes (referring especially to classes for the mentally defective), replied that some kind of preliminary examination was required prior to assignment. Seventy-nine per cent gave medical examinations, fifty-seven per cent educational examinations (assumedly in the main the ordinary promotion examinations and tests), and eighty-one per cent psychological examinations (mainly Binet testing). So far as could be gathered from the returns, the examinations at that time were rather crude and meager. Of one hundred and fifteen examiners, the largest group consisted of special class teachers (fifty-eight), eleven were supervisors of special classes or principals, four superintendents, five alienists or neurologists, twenty-two medical inspectors, twenty-one psychologists or clinical psychologists. Seventy-seven per cent of the examiners were educators, and twenty-three per cent physicians. Not more than about a fifth could at that time qualify as experts on mentally defective and backward children.

Now many school systems maintain elaborate organizations for examining and testing the pupils, and do not permit transfers without certification by the examining agencies.

Time to begin specialized training. Special training should be provided just as soon as the child's condition can be determined with reasonable certainty. In the case of the crippled, the speech defective, the mentally deficient, and those with visual and auditory handicaps, the special training should begin as soon as the child enters school. In fact, it might well begin during the pre-kindergarten period. On the other hand, mentally subnormal children of uncertain

diagnosis should be given adequate preliminary trials in regular or ungraded classes before being assigned to classes for the lowest grades of deficient.

Correction or removal of remediable physical impediments. Remediable defects, disorders, or diseases should be removed or corrected if they interfere with the efficient functioning of the psychophysical organism, if they tend to hamper the child's physical, mental, or educational growth or development, if they render it difficult for him properly to apply himself to his school tasks, and, although apparently not injurious at the time, if they lay the foundation for later diseases and breakdowns. Important among such defects are foci of infection (mostly in the tonsils, diseased dentures and gums), obstructions to proper breathing (nasal polypi, adenoids, enlarged turbinates, deviated septum), defective nutrition, glandular disfunctioning, and defective vision and hearing. To provide proper medical, hygienic, and physical treatment is often a humane measure for the child concerned, and frequently an economic investment for society. The removal of foci of infection and irritating impediments and the cure of diseases will enable some children to apply themselves better, to use the abilities they possess to better advantage, and to achieve greater success in their school work. Remedial treatment should be afforded certain types pending consideration of the contemplated transfer (for example, those suffering from impaired vision or hearing), while others should secure treatment at the earliest practicable opportunity after the assignment. It would be impracticable and unnecessary to defer the transfer of mental deficient until the effects of the treatment could be fully ascertained. Properly to carry out this recommendation may require the establishment of various school medical and dental dispensaries for the free treatment of the indigent, the provision of school lunches for the malnutri-

tion cases, and the enactment of legislation to reach the children of recalcitrant parents who refuse to heed the recommendations, although it is problematic how far the State may go in enforcing treatment.

Medical or physical treatment is the first measure of relief to give defective children. It will prove to be a valuable aid in many cases, but it should be regarded as an aid and not as a panacea for mental inefficiency. It will not remedy all mental and educational disabilities. Its influence will sometimes be wholly negative. Moreover, often when the physical treatment proves efficacious it must be followed by a special educational regimentation. But since the results of the medical treatment frequently cannot be foreseen, it should be included as an experimental preliminary step in our program of educational reconstruction for the mentally handicapped, and, of course, the physically maimed, with whom the results can be more accurately prognosticated.

Discharge and retention of pupils. No pupil should be discharged from a special class (with exceptions noted hereinafter) except upon the action of the responsible official in charge. But no pupil should be retained in a special class whose condition has been remedied or who has been so improved that he can successfully cope with the work in the regular grades. An effective system of reports or follow-up inspection must be instituted in order that all deserving children will be given proper consideration.

Preservation of case records. Records should be kept on permanent file in the proper department of all examinations, findings, assignments, transfers, treatments, and the results of treatments. If possible, an annual report should also be filed from the special class indicating the level of attainment the child has reached in the various branches, his special talents, his moral and mental characteristics, and the teachers' recommendations respecting his future training or

care. It is advantageous to assign serial numbers to the examinees, to file the records according to the serial number, but to arrange the index cards of the children's names alphabetically. The forms used by the author during the last decade for the physical examination, the pedagogical, personal, and family history, and the report from the special class, may be found in the report of the psycho-educational clinic in the *Annual Report of the Board of Education of the City of St. Louis* for 1914-15. A more complete "Schema" is available in Chapter XIX of *The Mental Health of the School Child*.

Systematic progress records must be kept of each child if we are to keep a check on the work done and the results achieved in the special schools. Such records, like geological strata, will provide psychic strata of the child's development. Such records may consist of samples of the work which the child has done at given dates in writing, drawing, arithmetic, clay, wood, and so on. But this form of record is not very practical because of the enormous accumulation which would occur in a few years. The institutions frequently follow the practice of taking photographs of the inmates periodically. This form of record, whatever its value may be, is not very practical in the public schools. The results of standardized psychological and educational tests, given periodically, will furnish valuable objective measures of progress. But whether or not such tests are given, the records should always include a written report of the teacher's estimates of the child's attainments and capacities, observations of his peculiarities, and recommendations. In some school systems the teachers are required to file three or four reports a year. Such frequent reports are burdensome and serve no vital purpose that cannot be served by an annual report if sufficiently elaborate and faithfully filled out. This is particularly true in the case of

defectives who are only capable of slow development. While the writer was director of the St. Louis special schools such a report was filled out one month after the admission of the child and thereafter at the close of each school year. These reports contain a mass of valuable information.

Qualifications of teachers in all types of special classes. Teachers to be certified for service in a special class of any kind should possess (a) *preliminary fundamental* training equivalent to a two years' professional course in a standard normal school or college; (b) *basic technical* training including courses in clinical psychology and psychopathology, on subnormal and abnormal children and in the clinical examination of exceptional children, including physical, anthropometric and psychological tests, and the working up of case histories through field investigations. In addition thereto they should possess (c) *specific technical* preparation for training the particular type of defective which they expect to teach, including courses in the necessary sensori-motor, industrial arts, specific corrective and remedial training, and adequate observation and practice under competent critic teachers. Special class teachers should have earned from 12 to 15 semester hours' credit in the *basic* and the *specific technical* courses, but it will scarcely be possible to put this standard into immediate effect throughout the country. It is desirable, but probably not essential, that the special class teacher should first have had several years of teaching experience in the grades. Beyond possessing technical skill, the special class teacher, if she would achieve maximal success, should be vitally interested in the particular class of defectives she has elected to teach, particularly in their physical, social, intellectual, and moral rehabilitation and fortification for the trials and responsibilities awaiting them after they leave school. She must be patient, resourceful, adaptable, progressive, and able to disentangle herself from

the routine methods of mass instruction. Nor must she confine her interests to the schoolroom. She should be social worker no less than teacher, and keep in touch so far as time allows with the child's vicissitudes after school, and be a messenger of light and comfort to the child and to the homes which need her sympathetic ministry.

Methods of instruction. The methods of instruction, training, and care must, in large measure, be individual, although it is possible, often desirable, and usually necessary to instruct in groups children who are subject to the same handicaps or the same degree of deficiency. The aim, however, should be to adapt the methods and the contents of the instruction to the peculiar interests, habits, previous history, and especially to the mental, educational, moral, and physical handicaps of each pupil, to modify and readapt the instruction from time to time to meet the developing needs of the child, and to allow each child to progress as rapidly as possible.

Organization, equipment, and appointment of classes. It is desirable to organize the special classes, especially those to which children are sent on full time for protracted retention, in centers or schools, with two or more classes to a center, in order to permit of closer grading or the departmentalization of the instruction, and in order to secure more ample supplies, equipment, and appointments. From the economic point of view the advantage of close grouping or classification is incontestable. A class containing from fifteen to twenty closely graded defectives can be taught just as successfully as a heterogeneous class with from ten to fifteen pupils. The larger the enrollment, the greater will be the number of pupils who will fit into each group. The classes or schools should be located in bright cheery quarters, containing ample floor and window space, and if possible, separate rooms for the industrial arts, domestic science and

gymnasium activities, with ample playground and garden space and pleasant surroundings, so that satisfactory conditions may be provided for the education of those unfortunates who, through no fault of theirs, are seriously handicapped in the struggle for existence.

Paramount need of proper educational equipment. It is idle to expect proper returns from special work with defectives unless adequate equipment, appliances, and supplies are furnished for the various branches of instruction. It is especially necessary to emphasize that there must be adequate and appropriate equipment for the sensory, motor, physical, physiotherapeutic, and industrial arts training for all types requiring such training. Lest it may seem superfluous to emphasize this requirement, let me explain that I have visited many special classes for mental inferiors that had no special equipment whatever. Indeed, some were not so well equipped as the regular grades. In some cases the teachers explained that they were expected to pursue the regular curriculum of studies, and therefore were not allowed any extra supplies. It must still be emphasized that mentally deficient and very dull children cannot be properly trained without the requisite equipment. The inability to procure necessary supplies is frequently due to the expenditure involved, but by judicious management the expenses can be largely limited to the cost of the initial equipment — the permanent tools and appliances, which, with proper care, will render service for many years. Nearly all the money expended for materials and supplies can be recovered through the sale of the manufactured articles, instead of giving the articles away, as has been demonstrated in classes under my observation.¹ Moreover, many objects of value can be made for the other schools in the system, thus effecting

¹ If necessary many materials can be obtained without cost, such as cigar and dry-goods boxes, rags, or discarded remnants from homes and stores.

counterbalancing economies. This procedure is justified not only economically, but educationally. We must so train the defective children that they will acquire some appreciation of practical values, and form the habit of accomplishing things which have a direct utilitarian value both to themselves and to society. However, the recommendation here made must not be abused. We know of a special school in which the teachers and pupils became so enthusiastic about making articles for sale that there was danger of transforming the class into a miniature factory. The training in the industrial arts in the special schools is given primarily for the sake of the educational training, and not for the purpose of creating and supplying a market. If the children are urged to keep on making articles when no further training values accrue from the process of manufacture, the shop becomes a factory and not a school.

CHAPTER V

SOME TECHNICAL REQUIREMENTS TO OBSERVE IN ORGANIZING INSTRUCTION FOR CHILDREN WITH ORTHOPEDIC, VISUAL, AUDITORY, AND SPEECH DEFECTS, AND DELINQUENT TENDENCIES

CLASSES FOR CRIPPLED CHILDREN

Admission requirements. Crippled children are eligible who cannot betake themselves to school because of orthopedic disabilities, and thus require bus service, whose muscular movements are so restricted by accident or disease as to affect their capacity for self-support, and who will profit from special orthopedic and physiotherapeutic treatment. An orthopedic examination and the necessary tests to determine the presence of active tuberculosis should be given before admission, including a psychological examination for at least all those who are mentally below normal.

Children with active tubercular disease should not be admitted to these classes, but should be assigned to hospital schools, preferably residential rural convalescent training institutions, which should contain a solarium, rooms affording a southern exposure, and facilities for outdoor classrooms or open window ventilation.

In large school systems, it may be feasible to organize separate classes for feeble-minded and very backward cripples. In any case, the practice is to be condemned of denying children the advantages of orthopedic or physiotherapeutic treatment if they can profit from such treatment, merely because they are subnormal.

Enrollment. The maximal enrollment per teacher for a class of mentally normal cases should be from twenty to

thirty, of the dull-backward grade from eighteen to twenty-two, and of the mentally defective from thirteen to sixteen. There is no evidence for the assumption that successful educational work for mentally normal cripples requires the limitation of the register to eight or ten pupils, especially in centralized schools where the pupils can be properly graded.

Transportation. The most economic solution is to arrange for the use of police-patrol automobiles, as is done in Chicago, Detroit, Boston, and Baltimore. Such a conveyance is marked "school ambulance" in Baltimore. Children whose locomotion is not markedly disorganized may be brought by older pupils who have been transferred to a near-by public school.

Discharge of pupils. Pupils whose orthopedic disabilities have been overcome, or who no longer require further physiotherapeutic treatment, or who would receive no further benefit from such treatment, and who are not receiving any special form of educational training which cannot be given equally well in other types of classes, should be transferred to the regular grades or to such other classes or schools (for example, ungraded, prevocational, or vocational) as will adequately meet their cultural and vocational needs. The practice of permanently retaining crippled children in classes for cripples when nothing further can be done to improve their specific physical disabilities, is without justification, if transportation to other classes can be supplied for those incapable of locomotion. Crippled children should be given the opportunity to associate with, and labor among, the children with whom they must live and cooperate in later life.

Organization. The rooms in the regular schools should afford a sunny exposure and be located on the first floor. A specially constructed building should contain only one story if the necessary ground space is available, otherwise two stories equipped with stairs and inclines (or an elevator, if

possible). A model building should contain an assembly room, academic classrooms, industrial classrooms, a room for curative gymnastics, electric treatment and massage, a solarium for heliotherapy, a bathroom, rest rooms (with a few wicker or woven-cane couches, or sanitary or army cots, wicker rockers, and folding chairs), an open-air room (with the necessary cots and blankets), a kitchen, dining-room, toilet-rooms, several exits, wide aisles, handrails along the walls, rubber or cork covering on the floors and stairs, and no thresholds between the rooms. The seats and desks of various sizes should be unfastened, adjustable, or semi-adjustable, and equipped with book drawers. Among seats or desks which will bear investigation may be recommended the following: The "A-O" desk chairs with right or left arm support, or the Elgin adjustable pedestal desk, sold by the National School Equipment Company, Minneapolis; the Derby adjustable pedestal desk, and the Rowles movable study desk, which has a folding top with a book stop at the bottom which can be fixed at any angle, sold by E. W. Rowles Company, Chicago; Model A, school chair desk, which has a similar arrangement for tilting the top, sold by The Delaware Chair Company, Delaware, Ohio; Eclipse movable chair desk with adjustable desk, and the Eclipse single pedestal adjustable desk, sold by The Theodor Kundtz Company, Cleveland; and the Moulthrop movable adjustable chair desk in which the top can be tilted from the horizontal to an angle of forty-five degrees, sold by The Dobson-Evans Company, Columbus, and by the American Seating Company, Chicago. The latter company also markets the American Universal desk, provided with a swivel chair, and a special adjustable single pedestal "crippled children's desk," which is provided with a swivel base, a cane back which can be replaced by webbing for a hunchback child, and an adjustable rest for the thighs. A complete equip-

ment will be needed for the gymnastic work and for the industrial arts training. Wheel chairs, crutches, braces, casts, an electric baker, a dynamometer, platform scales, and the like, will probably be supplied by philanthropic organizations, or other interested clubs, when the parents or the board of education cannot supply them.

Curriculum. The curriculum, in general, will comprise four chief divisions: (1) Academic. The course of study in the regular schools should be followed in the case of mentally normal cripples. (2) Physical care and rehabilitation, including orthopedic treatment, curative or corrective gymnastics, massage, electrical and heat treatment, and heliotherapy. (3) Manumental and semi-vocational training, including, according to individual requirements, kindergarten activities, paper and clay work, raffia, reed, basketry, woodwork, burnt woodwork, toy-making, loom-work (with foot and hand looms), rug-making, weaving, knitting, sewing, crocheting, embroidery, simple garment making, lace-making, millinery, hammock-making, leather-work, cobbling, brush-making, pottery, chair-caning, sheet metal, decorative and design work, the making of artificial flowers, free-hand lettering, printing, block printing, proof-reading, construction of artificial limbs, stenography, and type-writing. (4) Miscellaneous activities, including opening exercises, entertainments, recreational activities, rest periods for those requiring relaxation, the serving of hot lunches to all the pupils, and the building up of the morale of the crippled child, the development of self-respect, self-reliance, habits of self-help, the determination to conquer hampering physical conditions, and the ambition to achieve success in life.

Qualification of teachers. In addition to (a) the *preliminary fundamental* courses, and (b) the *basic technical* courses (see page 110), teachers should have pursued (c) *specific*

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technical courses on muscular and skeletal defects, orthopedic and gymnastic treatment and physical care of crippled children, industrial arts courses suited to their needs, and observation of teaching and practice teaching under expert supervision. It is recommended that a specially qualified physiotherapy teacher be appointed for the physical training.

Prevalence of crippled children. No governmental or other agency has thus far gathered nation-wide statistics in this country on the number of crippled children or adults. On the basis of a German enumeration in 1910 we should have over 133,000 crippled children in the United States. It has been estimated that there are 12,000 crippled children in Ohio on the basis of an enumeration in a restricted area.

CLASSES FOR THE BLIND AND THE PARTIALLY SIGHTED

Admission requirements. Pupils before admission should be given a thorough ocular examination by a competent ophthalmologist, while the mental subnormals should also be psychologically examined.

Organization of classes. Two different types of classes should be established.

(1) *Classes for the blind.* Admission to these classes should be restricted to pupils who are totally blind or almost so (for example, those with less than one-tenth vision) or whose vision would suffer rapid deterioration if the eyes were subjected to the ordinary processes of instruction in the regular grades or in the conservation of vision classes.

(2) *Sight-saving or conservation of vision classes.* To these classes should be assigned a variety of types with partial vision, namely those suffering from progressive myopia, or severe uncorrectable myopia (in which the distant vision can not be brought above one fourth), or from corneal opacities, congenital or secondary cataracts, *nebulæ* or scars which

cause eye-strain and reduce vision to six fifteenths or less, or from congenital malformations with acuity of six twenty-firsts or less or astigmatism of more than 3.5 diopters with a visual acuity of one fourth or less, or from keratitis (inflammation of the cornea) with limited acuity or persistent recurrence of the symptoms during treatment, or disease of the fundus with half vision or less, or hyperopia of more than five diopters with symptoms of asthenopia.¹

The classes may be consolidated in a separate central school, which will permit a sharper classification of the pupils, or they may be distributed through the grade schools. However, either arrangement should afford the pupils opportunities for contact with the sighted pupils in the instructional and social activities of the school. The sight-conservation classrooms should afford constant, natural, unilateral illumination, preferably from a northeast exposure, and adequate artificial lighting, when needed, for indirect or semi-indirect systems. The window illumination from an area equal to one fifth of the floor area should be made uniform, and glare eliminated through the proper adjustment of two buff-colored shades. The walls should be in light buff or dull finished French gray, and the ceilings white or cream. The seats should be adjustable, while the desks should permit of various angles of elevation (such as the Rowles or Model A, referred to on p. 116).

The assignments to these two kinds of classes may be made for full-time or part-time instruction. Blind pupils after spending several years on full time should be provided with readers and be given a chance in the regular grades. Pupils who are not so gravely handicapped visually and who are abler mentally may be prepared during given periods in the sight-saving classes to recite in the classes for the sighted. But they should not be required to do work imposing a se-

¹ The degree of visual acuity given refers to the condition after treatment.

vere strain on vision, more especially when they are suffering from deteriorating vision.

Enrollment. The enrollment should vary from ten to about twenty pupils, depending on the number of pupils who can be grouped into classes, on whether the class contains only full-time pupils, or only part-time pupils, or both full-time and part-time pupils, or only pupils who spend limited portions of their time in the classes preparing lessons for other classes.

Discharge of pupils. In addition to the elastic system of transfers and assignments suggested above, pupils whose vision has sufficiently improved to enable them to cope with the instruction without undue ocular or other handicap should be transferred to the regular grades or the sight conservation classes.

Curriculum. In the case of the blind, emphasis should be placed on teaching the pupils to read and write by means of the revised Braille method (see p. 11f), while large type, widely spaced paper, soft pencils and occasionally individual blackboards should be used for the partially sighted. Liberal use should be made of the oral method of presentation. The course should follow, so far as possible, the regular elementary curriculum in the case of the mentally normal blind or visually handicapped. The instruction for the backward cases should be more concrete, objective, and practical. The feeble-minded blind should be transferred to the classes for the feeble-minded after having been given a chance at touch reading. Gifted pupils should be given every opportunity to develop their special talents and to fit themselves for the highest type of service of which they are capable. An increasing amount of industrial arts and vocational training should be supplied, as the child grows older, selected with reference to his present interests and capacities and his probable after-career. The aim should be to

develop skills which can be applied to handicrafts and vocations in which the visual handicap will least interfere with the child's ability to earn a livelihood. The monumental and industrial training should include, among other things, sensori-motor work for the young, using large materials for the semi-sighted, woodwork, chair-caning, basket-weaving, rug-weaving, domestic art, broom-making, and piano-tuning. A few will be able to continue their training beyond the high school, and may be trained for teaching, osteopathy, law, ministry, music, and commercial pursuits. The equipment should include typewriters and dictaphones, the touch system of typewriting being taught to many of the partially sighted.

Special efforts should be made to develop the blind child's personality: to free him from mannerisms, a feeling of dependence, morbid consciousness of his handicap, and the abnormal craving for compassion; and to make him self-reliant, willing and able to help himself, resourceful, determined to contribute his share to the general good, and to be content with achieving the highest results which his handicap permits.

Qualification of teachers. In addition to (a) and (b), page 110, (c) training and experience should be secured in the specialized methods now in use in teaching the blind and the semi-sighted, and in various types of sensori-motor, monumental and occupational work suited to the visually handicapped. In order to save the children's sight, the teacher must possess some knowledge of different eye conditions, and know how to treat them. For example, she should know that a myope must have his work at a correct angle, that a quiescent case may suddenly become acute and need a different treatment, that a cataract case may use his eyes, while a child with choroiditis must be restricted to short periods of intensive work followed by relaxation.

Prevalence of the blind and partially sighted. According to the 1920 census there were 52,617 blind persons, or one for every two thousand of the general population in the United States, which is a decrease of 4655 compared with the 1910 census return, possibly due to the enforced administration of prophylactics to the eyes immediately after birth, forty States now making it obligatory to report eye inflammations of the new born.

CLASSES FOR THE DEAF AND HARD-OF-HEARING

Barring the modifications which must inevitably be made because of the difference in the sense organ affected, the recommendations made for the blind and visually handicapped apply to the deaf and partially hearing with respect to the organization and size of the classes, transfers, and discharges. The preliminary examination should always include a thorough examination of the condition of the ears and of the auditory nerve, and a determination of the auditory acuity. Little experience is at hand regarding the conduct of conservation-of-hearing classes for the hard-of-hearing who, as already remarked, are usually left in the regular grades or assigned to the classes for the deaf or speech defectives, nor have definite acuity standards for eligibility to such classes been generally agreed upon. Nevertheless, the need for the organization of these classes is almost as urgent as the need for the organization of the parallel conservation of vision classes. As a tentative provisional standard, to be modified with growing experience, admissions should be restricted to those only able to hear a forced whisper (at end of expiration) at a distance of less than six feet (six-twentieths).

Curriculum. Emphasis should be placed on teaching lip-reading, on the use of the oral method of instruction, as against gesture, pantomime and finger spelling; on the development of speech, and the correction of speech defects.

It is in our judgment not necessary, however, to proscribe entirely the pantomimic and manual methods of communication. These methods are not without merit in the case of the deaf of limited intelligence who never acquire proficiency in lip-reading, or those with or without speech defects who cannot acquire intelligible or articulate speech. These methods also possess value as supplementary tools of communication. The method of teaching lip-reading should utilize every avenue of approach through the eye and touch. Preliminary sensori-motor training should be given to the young. Liberal use should be made of the voice in speech and song, and various instruments in the production of sounds and music. Beyond adapting the literary instruction to the pupils' stage of mental and educational development, a great variety of manumetal and prevocational activities should be provided, such as reedwork, manual training, wood-turning, wood-carving, mechanical drawing, dressmaking, tailoring, cleaning, pressing, fancy work, mattress-making, millinery, sewing, housework, laundering, baking, cobbling, printing, sign-painting, photography, auto-repairing, bookbinding, bookkeeping, engraving, type-writing, barbering, dairying, gardening, and brick and stone laying. The aim should always be to develop skill in crafts and occupations in which deafness will not constitute an undue handicap, to develop special talents, and to give every opportunity to exceptionally gifted pupils to realize their highest possibilities.

Besides the (a) preliminary and (b) basic training, the teachers should possess (c) special training and experience in the method of oral instruction, in teaching lip-reading, speech improvement and speech correction for deaf children, and in the sensori-motor and occupational work appropriate for the deaf. They should possess knowledge of the causes and varying conditions of defective audition, and of the

hygiene of the ear. They should be messengers of information to parents and pupils on the importance of giving prompt attention to ear infection.

Prevalence of the deaf and hard of hearing. In the 1920 census, 44,885 deaf persons were reported in the United States, or one for every 2350 of the general population, while the corresponding ratio in 1910 was one for every 2060.

CORRECTION OF SPEECH DEFECTS

Eligibility. Pupils are eligible for training who are subject to some form of speech obstruction, defect, or disorder which is amenable to correction or improvement, such as baby talk, defective phonation, nasality, lispings, lalling, cluttering, stammering, stuttering, etc. The training is not primarily intended for children who merely mispronounce or misenunciate or express themselves inaptly, unidiomatically and incorrectly for reasons other than defects of speech. All pupils should receive training in speech improvement and expression, but this training should be given by the regular teachers.

The most essential phase of the certifying examination is the determination of the type and degree of the speech disorder. An attempt should be made to discover the causative factors, which, however, are frequently hidden in impenetrable obscurity. Many cases before the treatment is begun should be given the benefit of a physical examination, especially of the speech-producing and auditory mechanism, with physical treatment when indicated, and a psychological examination, including the determination of the "intelligence level" and the discovery of the possible operative and causative mental mechanisms.

Organization of centers. It will occasionally be desirable to assign pupils with grave speech disorders, or with speech disorders which exert a deleterious influence upon other

pupils, owing to the propensity of some pupils to imitate the defects, to speech correction classes for full-time assignment until they are improved, cured, or dismissed as incurable. But the most economical arrangement is to establish centers to which pupils from adjoining schools may be sent for speech training during two or more exercises per week.

Methods of correction. Many of the exercises, particularly the introductory physical exercises, breathing exercises, tongue and lip gymnastics, articulation drills, voice placement, and rhythmic speech drills, may be given as collective exercises to from ten to twenty pupils in a group. These exercises, however, should be supplemented by individual training adjusted to the needs of each child. The physical training and voice exercises should be reinforced by the removal of hampering physical obstructions and the psychological factors which may produce or aggravate the speech disability.

It is of imperative importance to secure the active coöperation of both the child and the child's family, so that the practice will be continued at home, and so that conditions will not develop in the home which are inimical to the child's progress. It is important to instruct parents and teachers how to handle the child with a speech defect so that they will further his improvement instead of unwittingly obstructing it.

In order to cope expeditiously and effectively with the problem of speech defectiveness, the schools should offer a minimum amount of training in the improvement and correction of speech to all kindergarten and primary teachers so that they may correct the simple, uncomplicated cases of lisping and baby talk early in the child's school career, thus leaving the more complicated cases for the special speech correction teachers. In fact, it would be desirable to make this training available to the pre-kindergarten speech de-

fective during certain periods of the week. Many parents could be taught to assist in the exercises.

Qualifications of teachers. The specific technical training (c), in addition to (a) and (b), (p. 110), should include courses on the anatomy and physiology of the organs of speech, the psychology and psychopathology of speech disorders and defects, the detailed technique of correcting the defects, together with observation of, and practice experience in, the examination and correction of speech impediments of various kinds. A study of psychoanalysis is not without value, provided it does not become a fetish and obsession.

Prevalence of speech defectives. Based upon my St. Louis survey, almost three per cent of all the children in the elementary and secondary schools in the populous urban communities suffer from speech defects and disorders of varying degree, not including a considerable number of cases of foreign accent, patois, or brogue.

CLASSES FOR DELINQUENTS AND TRUANTS

While the classes for the mentally defective and backward should in no sense be made dumping grounds for all types of truant, delinquent, obstreperous, and vicious children, many such children will prove to be backward or feeble-minded and will respond properly in respect to deportment, attendance, and application when placed under the appealing régime of the classes for the subnormals. There seems to be no reason why such pupils should be transferred to classes for the ungovernable, immoral, or vicious. Assignment to such classes should be the last resort. Nevertheless deficient delinquents who do not thus respond, and intellectually normal, unstable, or neurotic delinquents who cannot be controlled in the regular grades and who are a menace to the other pupils should be transferred to day or residential dis-

ciplinary schools, separately maintained for boys and girls, and retained there until they can be returned to the other classes without detriment to themselves or to the other pupils. It is of primary importance that these classes be placed in charge of teachers, preferably men for boys, who, besides having all the professional qualifications suggested on page 110, should possess wholesome, robust personalities, and a spirit of unaffected camaraderie which will enable them to win the pupils and become virtally interested in their welfare. They should be able to take the children out on worthwhile tramps and on field and industrial excursions, to exercise an elevating influence on their extra-school interests and pursuits, help to stabilize their instincts, develop habits of application and industry, and the desire to become industrially efficient, and honorable and just in their dealings with other people. The effort must be made to develop a civic consciousness, a sense of responsibility, and a desire to serve others. The teaching job is not merely that of providing a literary and industrial arts program suited to the pupils' abilities — although this will go a long ways toward preventing dependency and delinquency — but of developing ideals, lofty ambitions, and a proper morale.

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CHAPTER VI

THE TECHNIQUE OF ORGANIZING SPECIAL INSTRUCTION FOR THE MENTALLY INFERIOR AND EDUCATIONALLY DEFICIENT

Examination procedure. No child should be assigned to a class for the mentally deficient who has not been given the complete individual examination suggested on p. 105. Efforts should in all cases be made to secure a reliable history of the child's social characteristics and school progress, and an accurate determination of his capacities and incapacities, particularly the stage of development of his intelligence, judgment, and understanding, and his psycho-motor ability. It is recommended that, whenever possible, equally thorough examinations be given children who are on the borderline of mental deficiency, or who are very seriously backward, or who are subject to obvious or pronounced specific mental or educational disabilities. Less gravely retarded or affected pupils may be assigned upon the basis of the result of instruction, properly authenticated, or of standardized group psychological or educational tests, or both, to ungraded classes or sections subserving the functions of clearing houses.

Schemes for adjusting instruction to individual needs. A highly flexible and comprehensive scheme of organization is required to enable the larger schools economically and effectively to meet the needs of the very diverse grades and types of children, other than those already considered, who are lacking in mental potentials or in educational ability, or who are subject to specific mental or pedagogical disabilities, or who are pedagogically retarded but mentally normal. In

order adequately to meet the needs of this varied group of mentally or educationally maladjusted children, the following organization of classes, divisions, or schemes for rendering individual assistance is suggested:

1. Classes for the mental deficient.
2. Shop or industrial centers for older mental deficient.
3. Classes for the backward, dull, and restoration cases.
4. Prevocational centers or elementary industrial schools for the backward and motor minded.
5. Divisions, sections, abbreviated curricula, coaching teachers, subject promotion, shortened promotion intervals, use of effective methods and devices, and dynamic incentives, etc.

1. CLASSES OR SCHOOLS FOR THE MENTALLY DEFICIENT

Nomenclature. These classes should be referred to as special schools for individual instruction, opportunity classes, developmental classes, orthogenic classes, or by some other designations which will not wound the sensibilities of the parents.

Admission standard. The boundary lines for this group should be conservatively drawn both at the bottom and at the top, on the general principle, which is an axiom at law and which must never be forgotten in school practice, that the benefit of the doubt must always be given the child. Mental deficient with less than a three-year mentality (Binet-Simon age) or less than an I.Q. of 30, or with more than a nine-year mentality or more than an I.Q. of 70, and children who have the capacity to do satisfactory all-round third-grade work in the literary branches, should not be admitted to these classes. This gives a range of seven mental years, and 40 I.Q.'s., and from sub-kindergarten to beginning third-grade achievement. While contrasting sharply with current practice in many cities, I do not hesitate to affirm,

after extended experience in administering special public-school classes, that the range of mental and pedagogical ability represented between these limits is as large as it should be from the standpoint of the best interests of the children and the efficient administration of the instruction, especially when the pupils of these varying grades of ability are taught in the same class.

Rigid standards necessarily arbitrary; too drastic exclusions. The limits set out above are confessedly somewhat arbitrary, as any standard must be to be rendered workable at all in the hands of different officials. For example, one would scarcely be expected to enter for the first time a thirteen-year-old child with a three-year mentality in a public school special class, nor would one be expected to retain indefinitely a low-grade child who had proved incapable of making any appreciable improvement. Nevertheless, I have noted fairly satisfactory progress in some low-grade pupils who appeared to be entirely hopeless at first and who would have been summarily excluded from some school systems. One may easily become too drastic in rejecting from the special classes as uneducable children near the bottom of the curve of ability.

Too liberal admissions. On the other hand, the benefit of the doubt should also be given to the child who grades along the upper boundary line. A "borderline" child, or one of uncertain mentality, should not be assigned to a special class for the lower grades of mental deficient but to an ungraded class. There are cogent reasons why the examiner should not be overhasty in classifying the large number of children whose mental status is uncertain. The importunity for immediate results easily fosters the habit of reaching precipitate diagnoses, and must be checked by the cultivation of an attitude of judicious discretion.

Why judicious caution must be exercised in the diagnosis

of mental deficiency. Many circumstances may impel to overhasty decisions. The examiner is often importuned to deliver a diagnosis "right off the bat." The teacher may have been precipitate in recommending the transfer because she had grown weary or despondent over the child. Some children are merely apparently deficient, because of the operation of various factors: irregular attendance in school; lack of interest in, or application to, the school work; an attitude of defiance or negativism toward a particular teacher and determination not to learn or to recite; motor restlessness from excess of energy, neuroticism, or lack of volitional control, with concomitant distractibility of attention; apathy, inability or unwillingness to recite because of a speech defect or difficulty of expression, the presence of which may not always be recognized because of the obscure nature of the disorder; the presence of emotional disturbances, conflicts, inhibitions, phobias, anxieties, obsessions, infantile fixations, or submerged complexes,¹ the presence of which may not be suspected; temporary illnesses, injuries, or deleterious physical or social influences; a slow rate of development with possibilities of eventually catching up; temporary stagnation on a "resting plateau"; racial differences; defects in the measuring scales, and the like.

The Slavic child, to refer to racial differences, tends to be heavy and sluggish, and the Latin restless, shifting, volatile, and voluble, with rather unstable attention so far as concerns the ordinary school tasks. The German child is usually thorough, even if inclined to be rather slow.

The child's performance in the formal tests may be affected by obscure personality traits not only in his own

¹ The Freudians hold that many dull, tired, indolent children are merely inhibited by "infantile fixations," anxieties, and conflicts, which do not respond to punishment, coercion, or rewards but only to psychoanalytic treatment.

make-up but also in the examiner's make-up. The intelligence age-ratings obtained by the individual scale in most frequent use (the Stanford-Binet) are too low in many age levels for which the diagnostician should, but frequently does not, make due allowance.

Because of the operation of these and other factors, the child's real level of ability may not always be correctly gauged by his performance in the school work or in the standardized educational and psychological tests.

Doubtful cases to be kept under observation. The proposed upper limit of 70 I.Q. and a Binet-Simon age of up to, but not including, ten is admittedly too high in many cases, especially when the Stanford-Binet scale is used. We have known children of 65 I.Q., and even less, who have had enough ability of various kinds to achieve a considerable degree of success in life. We have known the descendants of parents no more highly endowed who have achieved not only success but eminence. Therefore we plead earnestly for the general adoption of a policy of judicious discretion and suspension of judgment in dealing with children of doubtful mental diagnosis who occupy a rather wide "borderline zone," ranging from an I.Q. of 65 or less to about 80. Such pupils should be assigned on probation for a thorough try-out in an ungraded, observation, or "adjustment" (A. H. Sutherland) class, where they can be carefully observed under the advantages of special aid and expert instruction.

Nature of the observations to be made. What observations should the teacher make on such children, or in fact on all school children? Among the most important characteristics to observe are the following:

a. Pedagogical peculiarities. The ungraded teacher with her opportunities for intensive, individual work, should be able to determine accurately the status of the child in the various branches at the time of matriculation, and the de-

gree of progress he has been able to make under special instruction within a given period of time. What are the child's special pedagogical defects, interests, and talents? What causes can be discovered for his special handicaps? The teachers' report should always indicate the level of accomplishment or efficiency which the child has actually reached in the different branches under the superior advantages afforded.

b. Psychological peculiarities; interest and attention. — What pronounced or dominant interests in the activities in and out of school can be found? What are the child's qualities of attention? Is there depth and persistence of attention? Can it be easily aroused and fixed? Can the child become completely immersed or absorbed in anything? Or is there a persistent state of high distractibility of attention? Is aprosexia present? If so, what is the cause?

Memory. Does the child's memory possess a high degree of impressionability, tenacity of retentiveness, and ease of recall? Does he memorize easily but forget rapidly? Is his memory level higher than his intelligence or comprehension level?

Intelligence. Is he slow to grasp, is his judgment weak, is he unable to reason cogently, especially in dealing with abstractions? How much retarded is he according to the standardized tests? In a word, is the child lacking in mental alertness, ability, or strength?

The teacher may find it convenient to classify the child provisionally with respect to intellectual ability into the five traditional classes: very superior, superior, average, inferior, and very inferior.

Motor traits. What are the child's motor traits? Is he restless, quick or slow in execution, precise or incoördinate in his movements, is he "motor-minded," "mechanically inclined," interested in manipulative and constructive activ-

ities? In what types of mechanical or practical arts activities is he especially interested and capable? Fortunately many children who are conspicuously inferior in the verbal intelligence tests, possess considerable aptitude in mechanical and industrial activities.

Emotional and social traits. What are the child's emotional peculiarities? Is he emotionally unstable, excitable, phlegmatic, or imperturbable? Is he given to brooding? Is he unsocial, seclusive, solitary, "shut in"? Does he avoid play? Is he irritable, sensitive, passionate, rough, coarse, destructive, cruel, malicious, implacable? Does he enjoy tormenting or inflicting pain on his fellows or animals? Is he subject to sexual irregularities, aberrations, perversions, or precocities? Many weak-minded children are subject to temperamental and emotional abnormalities.

c. Complex indicators. The Freudians stress the necessity of watching for the presence of "complex indicators" which they allege point to submerged complexes indicative of repressions and conflicts in the child's unconscious life. Among such indicators are mentioned:

(1) *Physical signs:* stuttering, twitchings, disturbances of writing, neuralgia, pains in the head and stomach, skin eruptions, hysterical or allied neurotic manifestations.

(2) *Psychic signs,* of three types:

- (a) *Anxiety phenomena.* The child may be afraid when called upon to recite, and therefore remains entirely unresponsive, not even betraying a gesture, in consequence of which he may be considered stupid or lazy. A special type of phobia, referred to as "examination anxiety" (or fear of examinations), is ascribed to the "father complex" (the fear of the father transferred to the teacher) or the "mother complex" (the fear of the mother similarly transferred), and represents a damming up of the child's eroticism. Stuttering and writer's cramp are also included among the "anxiety phenomena."

- (b) *Obsessions* (besetting ideas which more or less persistently urge to action), among which are included stereotyped gestures, ceremonials in walking (such as stepping on or avoiding cracks, counting steps, posts, or stairs), elaboration of a secret speech or writing, mistakes in speech and writing (slips of the pen or tongue), senseless habits of writing (executing flourishes, shadings, or certain loops), laughing at serious remarks, obsessional washing, agoraphobia (dread of being in or crossing open spaces), and claustrophobia (morbid apprehension of being in inclosed spaces.)
- (c) *Abulia* or "*deficiency of will*," in which the subject is overwhelmed by conscious or unconscious motives, so that he becomes impotent to make decisions or to act. It is well to observe these and other typical phenomena which, according to the Freudians, crop out in normal and abnormal subjects from unconscious trains of thought induced by subconscious complexes which have not been resolved or dissipated, but great caution must be exercised in attempting to interpret the signs. Premature conclusions must be avoided in this obscure realm, in which unbridled speculation has run riot, until more authenticated knowledge is at hand.

Organization of classes. The tendency in the United States, in contrast with Europe, is to establish separate classes in the regular school buildings. St. Louis, where nearly all of the classes are located not only in centers containing two or three classes, but in "special schools" located entirely apart from the other schools, is a shining exception. Every school administration should give most careful consideration to the relative advantages of establishing single class units or centralized schools. What are some of the advantages and disadvantages attaching to each type of organization?

Advantages of establishing two or more classes in a special class center in the grade building or in a segregated school. (1) *Better grouping.* The special school permits of decidedly better classification or grouping of the pupils for

purposes of instruction. In the single-class school the teacher must handle all grades and all types of pupils. Because of the limited number of pupils available, only a few can be assigned to a group, perhaps only two or three. Hence the teacher must spend a large portion of her time in teaching pupils singly, and the children must, in consequence, spend a large part of their time in seat work, which is sometimes rather profitless because of lack of supervision. On the other hand, when there are numerous children in a center, more pupils can be found of similar mental levels, educational attainments, and handicaps, hence more pupils can be assigned to each group, and more groups can be formed. With three teachers in a center, it would easily be possible to classify the children into at least half a dozen groups, and possibly into eight or ten. The economic advantage of this arrangement is quite patent. It will make possible an increase of the class registration by at least half a dozen pupils without increasing the teaching load.

Nevertheless, it must be emphasized that individual instruction must never be wholly abandoned. It is of the very essence of special class work. All pupils will require individual attention in certain branches, and certain anomalous types in practically everything.

(2) *Departmentalization.* The consolidated school makes possible the introduction of departmental instruction. (a) *Advantages to the teacher.* In the single-class unit the teacher must offer all of the instruction. But few teachers possess sufficient versatility and skill to do all phases of the required work equally well, and sufficient strength and resolution to keep up with the developments in all the fields of special class work. In the special school the teachers can specialize, one teacher carrying certain branches and the other teachers other branches. This will afford the aggressive teacher the opportunity to become a specialist. She will have time to

study her particular teaching problems more thoroughly, to digest all of the important literary contributions, and to thoroughly analyze the particular difficulties and needs of each child in the field of her specialties. No one can be expected to keep abreast of the times in all branches of instruction, but the schools have a right to require a teacher to keep up with the advance in her specialty. Let no one succumb to the delusion that because the special class teacher is dealing with mentally inferior minds she can rest on her oars. These minds have set problems which the ablest students have not yet successfully solved. We have not yet reached the stage of finality in the pedagogy of the mentally handicapped. There are still vast opportunities for improvement in the classification and teaching technique of subnormals, and there is no escape from stagnation, even in this field, except through constant study, wakefulness, and enterprise.

An incidental advantage of the departmental plan to the teacher is that she is brought into contact with more minds, which will afford her welcome relief from the monotony and boredom of close confinement to a small group of pupils.

(b) *Advantages to the pupil.* The advantage to the pupil is obvious. He will receive instruction from a number of teachers, some of whom are stronger in one thing, others in another, and all of whom will differ in personality make-up. We recognize the importance of providing a change of teacher personality in the grades by passing the child from teacher to teacher every semester or every year, instead of keeping him with the same teacher. The disadvantage of keeping the child under the tutelage of the same teacher might not be great if the teacher were an unusually capable one, but it would be little less than tragic to restrict a child during his whole school career to one teacher if she happened to be inefficient, eccentric, abnormal or neurotic. Many de-

fectives in one-room schools spend their entire school career with one teacher.

(c) *Administrative advantages and disadvantages.* The departmentalization of the work also tends to create a better spirit in the school, a more cohesive organization, more co-operation, and more team work. The necessity of observing a time schedule serves as a valuable check on the tendency, sometimes evident in the special classes, of conducting the work without definite plan, system, or program. Under such a system some teachers tend to overemphasize the lines of work in which they are particularly interested, and neglect others, often to the detriment of the pupils. The departmental plan can be successfully operated only on a time schedule, which, of course, has its disadvantages. The departmental system is more difficult to administer. Children must pass from room to room, and floor to floor at regular intervals. It is more difficult to employ the project and correlation methods unless all the teachers take special pains to coöperate and to correlate their instruction around the "correlation core." Centering instruction around one project is easily managed when one teacher handles all the branches. This is perhaps the greatest drawback attaching to departmentalization.

(3) *Better equipment.* The central school will probably receive a more adequate equipment than a single class, since more pupils can use the equipment, thus reducing the per pupil cost.

(4) *Prevention of conflicts between normal and defective children.* The pupils are removed from contact with the normal child, when the school is located apart from the grade school. Some contend that mentally deficient children exercise a bad influence on the normals, and hence should be removed from their presence. Others contend that the normal children annoy, ridicule, tease, or "bully-rag" the men-

tally deficient, who should therefore be removed for protection. Based upon actual experience in the administration of special schools nearly all of which were located some distance from a grade school, I do not hesitate to affirm that mentally defective children are much happier in a segregated special school center, provided the school is properly housed, environed, and organized, and provided the parents do not make the children discontented, as is sometimes the case, because of their slow progress or inability to return to the grades.

Alleged advantages of the separate rooms in the regular school building. (1) *Classes more accessible.* There are more class units, hence classes are scattered through more buildings, and are thus made more accessible to the pupils. This is an element of economy and convenience. Many pupils can walk to school, who would otherwise have to be transported in street cars or busses.

(2) *Less opposition to assignments.* There is less parental objection. It attracts less attention to transfer a child to another room in the same school than to a different school, especially when the latter is a segregated special school. The parents are very sensitive to the comments made regarding such a transfer, especially the comments of their neighbors, because of the feeling that a stigma attaches to the transfer to a special school, to which opprobrious terms are not infrequently applied. They feel that if the child continues in the same school the neighbors will be none the wiser.

It is also felt that the grouping of many abnormals in a center throws the abnormalities into bolder relief, thus making them more obvious to outsiders, and making the children more conscious of their peculiarities and inferiorities.

The heightened parental objection is undoubtedly one of the greatest drawbacks to centralizing the children in segregated buildings, although offensive epithets are just as freely

or even more freely applied to the classes when they are established in the regular buildings, where their purpose soon becomes known to all the pupils.

(3) *Grade teachers will visit oftener.* When the classes are in the grade buildings they are more accessible to visits by the principal and the other teachers. It is contended that the teachers of the normal would benefit from contact with these classes. True, but few teachers avail themselves of this opportunity even when the classes are in the grade building. Those who desire could, no doubt, receive permission equally readily to visit the nearest special-school center.

(4) *Earlier transfer.* The deficient child will be transferred earlier, because if the special class is in the grade building the teachers and principal will constantly be on the alert for children who may need its benefits. This argument probably possesses little weight in the modern school system in which systematic methods of locating deficient children have been adopted and in which no child can be transferred until duly certified after a special examination.

(5) *Deficients learn imitatively from normals.* It gives the pupils the benefit of association with the normal children during the recreation periods, intermissions, and general assemblies. It is argued that mental deficient learn much imitatively from the normal pupils, and that this tends to advance them socially, educationally, and intellectually. Parents are wont to dilate on these benefits, and also on the fear that if their children are assigned to special classes they will be "dragged down" mentally and morally and will acquire imitatively many objectionable practices from the other children. There may forsooth be some advantages obtained from the association with the normals, but these have been overrated. In point of fact, in many school systems where the special classes are in the regular buildings, it is found necessary or desirable to keep the special children

apart from the normal so far as possible in order to avoid the conflicts which often arise. They observe different periods for the intermissions and for the dismissals.

(6) *Special schools more expensive.* The special schools are more expensive per pupil when located in segregated buildings, when, as is sometimes the case, it is necessary to pay rental on the building, engage a special janitor or attendant, and carry a separate fuel expense. In 1919-20 the average cost per pupil in the special schools in St. Louis was \$180, as compared with \$129 per pupil in a single class which did not have a rental expense or a separate janitor or a fuel account. This objection does not, of course, apply to the centers located in the grade schools.

To summarize: From the standpoint of the efficiency of the instruction the advantages are decidedly in favor of the centralized segregated special school, particularly if the building and grounds offer the advantages which such a school should have, namely an assembly room, a gymnasium, an academic recitation room, a manual training room, a room for raffia, reed, sewing, and kindred activities, a kitchenette (one of the other rooms can be cleared for a dining-room), a laundry-room, a stock-room, toilets and baths, playgrounds and grounds for economic and decorative gardening.

2. SHOP CENTERS FOR THE MENTALLY DEFICIENT

There should be established shop or semi-vocational schools equipped to provide economically useful forms of industrial and semi-trade training for the higher grades of mental deficient. The transfer should be made to these schools one or two years before the children are allowed to leave school. Separate schools should, preferably, be maintained for the boys and the girls.

Discharge of pupils. While these classes are not designed

to be restoration classes it may happen, through error of diagnosis, that children who have been assigned are not deficient. The teacher should be constantly on the alert to discover such pupils in order that they may be transferred as soon as possible to other types of classes.

Prevalence. The estimates of the number of feeble-minded children in the grades vary from about one third of one per cent to three or four per cent. My own estimate, based on many years of experience in several large school systems, is that only about one half of one per cent of the elementary pupils in large school systems can be diagnosed as genuinely feeble-minded from the standpoint of the socio-industrial or legal definition suggested in Chapter III. If we deduct the low-grade mental defectives who will be excluded and others who will be privately cared for or who will not enter the public schools, it is probable that the average large school system will need to provide accommodations in the classes for the mentally deficient for rather less than one per cent of the grade pupils, if the admissions are restricted in accordance with the recommendations made on page 130. Some of these pupils will eventually prove not to be feeble-minded, socially considered.

It must, however, be emphasized that the proportion of mentally deficient children will vary greatly from school to school in the same school system, depending upon social, economic, racial, and other factors.

Variation of the proportion of mentally inferior children with social and economic standing. This variation appeared clearly in the distribution of the feeble-minded and borderline children found by the writer in the different St. Louis public schools during a six-year period. During the first triennium of this period the principals were asked to refer for examination the children who were assumed to be mentally defective. During the latter triennium the schools were re-

quired to report each year on especially prepared blanks the one per cent of pupils who were judged to be the most deficient in intelligence. The writer then selected for individual examination those who seemed from the data submitted to be of the lowest grade of mentality. After these data were collected the writer classified the white schools into three groups, very superior, fair, and very inferior according to the social and economic conditions of the population in each district. The writer was fairly familiar with these conditions, having made several trips to each special and elementary school in the city. However, ten schools were omitted from the tabulation because the facts were not sufficiently known. Nine schools were classified as very superior, twelve as very inferior, and fifty-nine as fair. There was no way of ascertaining the number of different children who had been on the school registers during this period. We have therefore used the registration figures at the close of the last year of the period (5836, 9535, and 41,445 for the three groups in the order given above). It is evident that this method of analysis, although based on a six-year survey, is subject to various limitations: the growth in the attendance of the schools in the three groups during this period may not have been uniform, in which case our per cents would be based on attendance figures which are more or less inaccurate relatively; the classification of the schools into the three groups may be more or less inaccurate, but probably only slightly so, so far as affects the extreme groups; and the attempt to "rout out" the mental inferiors may not have been done with the same care and vigor in all of the schools, although the effort was certainly made during the last three years to ferret out the cases wherever they were.

Recognizing these unavoidable imperfections, it is found that the ratio of mentally defective and borderline in the socially and economically superior school districts was 0.31

and 0.31 per cent, respectively; in the inferior districts, 1.42 and 1.43 per cent, respectively; and in the fair or average districts, 0.55 and 0.74 per cent. The difference between the best and the poorest districts is quite striking. (The total number of feeble-minded was 383 and borderline 464.)

These findings are in accord with the results obtained from standardized educational and psychological tests. Such tests given in America, Belgium, Italy, England, and elsewhere, have shown that the children of the professional classes, such as doctors, lawyers, teachers, professors, preachers, or diplomats, and of the higher social strata are superior to the children of skilled laborers, unskilled laborers, servants, street vendors, or clerks.

The consideration of the functions, basic conditions, size, and curriculum of the classes for the mentally deficient, and the qualifications of the special class teachers is reserved for fuller treatment in the next two chapters.

3. UNGRADED OR ADJUSTMENT CLASSES FOR THE BORDERLINE, BACKWARD, AND RESTORATION CASES

Admission requirements. These classes, as already explained, serve the purpose of observation classes or clearing houses, in conjunction with the psycho-educational clinic or division of tests, or as independent clearing houses for children of uncertain mentality when no other clearing-house agency is available.

The following classes of pupils should be considered eligible for assignment: (a) subnormal children who are on the *borderline* of mental deficiency, with I.Q.'s running as low as 65, or even lower. It will eventually appear that some of these children are mentally deficient. When this is the case they should be transferred to the classes for such pupils. Others who will remain on the borderline, or will make considerable progress and prove to be only backward, will be

retained in the ungraded classes. (b) Intellectually *backward* children who, while not mentally defective, are incapable of successfully coping with the requirements in the regular grades, and who require special assistance and a different program of work. All of these cases will be retained in the ungraded classes except those who prove to have more potentiality for growth and development than was anticipated. They will be returned to the grades. The above types should be transferred on full-time assignments. (c) *Restoration* cases, which include children who are temporarily mentally retarded and capable of restoration, and children who possess good mentality but are educationally retarded in one or more branches for various reasons, such as late entrance, irregular attendance, frequent transfers, serious illness, malnutrition, indifference, lack of application, mental conflicts or inhibitions, or poor teaching, but who are capable of restoration if given adequate aid in time. These children may be given temporary full-time assignments, or they may be transferred for one or two recitation periods a day for special aid in their weak branch or branches. They should be restored to grade as soon as possible.

Organization of classes. It is highly desirable to establish centers of two or more classes, but in the regular grade buildings, so that the pupils may be given every opportunity to associate with the normals and to join in the varied congregative activities of the school. Properly to handle single-unit ungraded classes would require an exceptionally versatile teacher. She might be called upon to teach everything in the regular curriculum from the lowest primary to the grammar grades, and all the specialties required in physical education, industrial arts, and speech training. Moreover, it would be difficult to do complete justice to the pupils in an ungraded class containing pupils who may vary in chronological age from six or seven to fourteen or fifteen, in mental

status from those on the borderline to those who are mentally normal and only educationally deficient, and in educational status from sub-first to the fifth or sixth grade. Centralization will make it possible to classify the pupils or to departmentalize the work.

Modes of classification. The classification of the pupils in the ungraded classes may present a rather complicated administrative problem. There are two chief modes of classification, each with its peculiar advantages and also disadvantages.

First, the pupils may be classified according to their degree of mental defect or according to their degree of prospective improvement, rehabilitation, or restoration. When so classified, there would be, preferably, three classes, one for the restorable, one for the backward, and one for the borderline cases, or at least two classes, namely, one for the restorable and one for the borderline and backward. This arrangement will make possible a much better adaptation of the instruction to the needs of each group and the individuals in the group. The industrial arts and literary work can be better differentiated and proportioned. The teacher can hold to a more definite and constant aim for each group. For example, if she has a group of restoration children she will concentrate on intensive literary instruction. The disadvantage of this arrangement is that the pupils in each group may be quite divergent in educational attainments. Thus the educational level of the backward cases might very well vary from first-grade to fifth- or sixth-grade proficiency.

Second, the classification may be based on the children's educational achievement level. A large center would permit of a class for each grade, and a smaller center a class, say, for the pupils doing sub-first, first- and second-grade work, another class for those doing third- and fourth-grade work, and a third class for those doing work above the fourth

grade. This plan of organization makes it possible to group children together who are uniform or fairly uniform in their educational advancement (particularly in the literary branches). The drawback is that the pupils would be quite heterogeneous in mental capacity. Each class would contain children varying from borderline to mental normality. The disadvantage is that the teacher may tend to follow a common aim in the handling of all the pupils in a class, no matter how much they might differ in mental potentials. She may plan the work with a view to the restoration of all the pupils although some might be quite incapable of restoration. She would find it difficult to adapt the method and subject-matter to the varying levels of ability.

Both plans present advantages and disadvantages, but the first plan has, in the writer's experience, proved superior, although it is frequently more difficult to administer properly.

Modified plan. Where it is not possible to organize centers, a class may be established in one school for one type of child, and other classes for other types in other schools, according to the requirements in given districts. Pupils from the schools served should, of course, be transferred to the classes which most nearly meet their needs.

Curriculum. The success of the ungraded class depends primarily upon the adaptation of the curriculum to the individual needs of an exceedingly varied assortment of mentally and educationally handicapped children. The problem with the restoration cases is to provide intensive coaching or drill in the regular program of studies, or in the branches in which they are particularly weak, so that they may be returned as soon as possible to the regular grades. While provision should be made at the outset for a larger amount of hand-work for the borderline and backward than is afforded in the regular grades, they should, if admitted young, be given every benefit of the doubt, and should receive a very

considerable amount of instruction in the literary branches for several years. But when their limitations in the literary subject-matter have been convincingly established, they should be given an increasing amount of industrial arts training, properly correlated, both because of its practical vocational utility, and because of its value in rendering the literary instruction concrete and meaningful. It is evident that these children will receive more literary instruction than the children in the schools for mental deficient. But the literary instruction must be concretely presented, and it should be properly correlated, preferably by means of dynamic projects, with the manumetal activities, while much use should be made of the oral method of presentation. Most of the arithmetic work should be orally presented in connection with projects. Most of the manumetal and prevocational activities can be selected, according to the requirements of the pupil material, from those recommended in the next chapter for the mentally deficient.

Success of ungraded class work. The success of the work in the classes for the borderline, backward, and restoration cases may be judged by the data which I gathered on the 3111 children who were enrolled during varying periods of time in the St. Louis ungraded classes in 1916-17. According to the principals' reports, forty-two per cent were restored to grade, while eighty per cent had made greater progress in the ungraded classes than they had previously made in the regular grades. The others had not been in the classes long enough to "get into their stride," or were proving to be more deficient than was first thought to be the case.

4. ELEMENTARY INDUSTRIAL OR PREVOCATIONAL SCHOOLS FOR THE BORDERLINE, BACKWARD, OR MOTOR-MINDED

The following types of pupils should be assigned at the age of thirteen or fourteen (depending on the age limit of the

compulsory attendance law) to prevocational schools affording a richer and more advanced program of industrial arts or semi-vocational (and possibly vocational) training: (1) borderline and backward children from the ungraded classes; (2) children of good or fair mentality who are retarded or disinterested in the literary subject-matter, but who have ability in, and inclination for, manual forms of work, and who wish to enroll; (3) many troublesome, ungovernable, or truant children who do not respond to the literary instruction but who would respond to various forms of handwork; and (4) children who may not be pedagogically retarded or otherwise defective but who look forward to entering the crafts or trades and who, because they may have to leave school early for work, ought to be given opportunities for industrial training, should they so desire. It is preferable to establish separate schools for boys and girls.

Where such schools cannot be established, it may be possible for the junior high schools to organize satisfactory industrial divisions for these children, provided the entrance requirements are lowered sufficiently to admit them. Many children on leaving the ungraded classes would not be able to complete the sixth or seventh grades satisfactorily. Continuation classes might also be so organized as to meet the needs, in a measure, of these pupils.

Discharge of pupils from the ungraded classes. The questions of the promotion, return to grade, or transfer to schools for the mentally defective have been sufficiently considered above.

Prevalence. The problem of the education of the borderline and backward grades of deficient is, at least numerically considered, more important than the education of the feeble-minded. The number of borderline, potential feeble-minded, and backward pupils varies greatly from school to school, but would, in the larger school systems, probably in-

clude from three to five per cent of the elementary school enrollment. The number included in the restoration group, who are merely slightly or temporarily retarded mentally, or who are pedagogically retarded but mentally normal, cannot be estimated with any degree of precision, but it is much larger than the combined mentally deficient and backward-borderline group. It would probably include about twenty per cent of the elementary pupils. It is not necessary, or possibly even desirable, that this larger group of educationally or mentally retarded pupils should be assigned to special classes, except temporarily or on part-time. They can be reached more or less satisfactorily through other types of administrative adjustment. Brief mention will be made of various schemes which have obtained more or less vogue.

5. MISCELLANEOUS PLANS OR DEVICES FOR ADJUSTING INSTRUCTION TO THE NEEDS OF THE INDIVIDUAL PUPIL

1. **Shortening of the promotion intervals.** One of the earliest administrative plans¹ adopted for the purpose of reducing retardation is the promotion of the pupils semi-annually or quarterly, so that those who fail will only have to repeat one half or one fourth of the year's work, instead of the whole year's work. The St. Louis plan of quarterly promotions introduced particularly for the benefit of superior pupils in the early seventies, and still in use, is the most conspicuous and probably the most successful short-interval promotion scheme. Pedagogical retardation can unquestionably be considerably reduced by reducing the promotion interval from ten months to five months, or, better still, to ten weeks.

¹ As was shown in Chapter II, the earliest attempt consciously and systematically made by the public schools to adapt the contents and methods of instruction to the special needs of handicapped children was through the establishment of special schools or special classes.

2. Sectioning, or grouping pupils into divisions according to ability, or providing parallel or differentiated courses of study. The "Baltimore plan," which was introduced about 1898, and which aimed to further the progress of all grades of pupils, provided differentiated courses for the dull, average, and superior pupils during the first six years. The slow pupils, who, apparently, were given more oral and concrete instruction and handwork, covered less ground than the average or bright. The bright pupils were afforded better opportunities in the literary branches, were allowed more initiative and entrusted with greater responsibilities. Beyond the sixth grade the instruction was departmentalized, promotion was by subject, while the bright pupils were permitted to pursue extra subjects. The "Santa Barbara plan" was similar.

The Cambridge, Massachusetts, double-track plan provided, in its 1910 revision, two parallel courses in the elementary grades, one of eight years for the average pupils and one of six years for the gifted pupils. Children were transferred at various "transfer points" according to individual requirements from the one course to the other. This arrangement was designed to promote the interests of gifted or superior children, who were enabled to do one third more work each year. The Le Mars, Iowa, plan was quite similar.

In the Elizabeth, New Jersey, plan, which was also essentially a scheme for the rapid advancement of superior children, the pupils in the eight grades were divided into three or more sections according to ability, and were permitted to progress as rapidly as possible. Transfers were made from section to section according to the pupils' progress. All sections, however, were taught by the same teacher.

The plan of sectioning children into slow, medium, and fast classes on the basis of group tests of intelligence is vigorously advocated and widely followed at the present time.

3. Assistant or unassigned teachers for the laggards, and systems of "class-individual" instruction. In the original "Batavia plan," introduced into the Batavia, New York, schools in 1898, an assistant teacher was added to the room "to work up" by developmental instruction (rather than by mere "coaching") the retarded pupils in order to secure equal progress among all the pupils — an objective which, of course, cannot be realized with children who are genuinely lacking in mental potentials and who require not only individual attention, but a differentiated course of training. Later all the teachers gave half their time to individual instruction and half to class instruction.

In the Newton, Massachusetts, plan an unassigned teacher gave special attention to maladjusted pupils, either individually, or in divisions, or in small groups.

Somewhat similar to the revised Batavia plan are the systems of individual aid, instruction, and promotion, introduced into the regular grades years ago by Preston I. Search (the "Pueblo plan") and Frederick Burk (in 1913 in the first eight grades of the elementary department of the San Francisco State Normal School taught by practice teachers), and more recently by C. W. Washburn (in Winnetka, Illinois) and Helen Parkhurst (in Dalton, Massachusetts). In these systems minimum emphasis is placed on group recitations or on "hearing lessons," thus leaving the regular teacher free to give the needy pupils special aid and instruction. Each pupil is allowed to progress as rapidly as possible, quite independent of the rate of progress of the other pupils. In the Winnetka schools the pupils spend three hours in individual work and two hours in socialized and self-expressive activities, including discussions, group projects, dramatizations, field trips, music, and team play. The pupils largely teach themselves with the aid of standardized educational tests, self-corrective practice materials, and

"goal books." The goals represent the definite objectives which the child must reach in all the "common essentials," writing, spelling, punctuation, capitalization, number-work, reading, etc. Similar systems of individual instruction are now in experimental use in many elementary-school systems. In the so-called "Dalton laboratory plan," which has recently been adopted by thousands of schools, particularly in England, the children work individually except for certain group activities. Each child assumes the responsibility of covering in his own time and pace the required assignments in each subject, which are presented in mimeographed sheets containing the work to be done in the course of one month. After the completion of the assignment the child is permitted to proceed to the next assignment. The pupils spend much time in laboratories equipped for special subjects which (in the ideal plan) are in charge of special instructors who answer questions, offer suggestions and aid, and exercise general oversight over the laboratory activities.

It may be observed that there is, after all, less novelty in these plans than might be supposed. They represent essentially a return toward the system of individual instruction which obtained before 1680, when, it is alleged, "simultaneous" instruction was first introduced, namely, into the Christian Brothers' schools. J. Landon is authority for the statement that as late as 1843 there were 5844 primary schools in France in which the instruction was wholly individual. The instruction was largely individual during the early period of the American public school system.

4. **Promotion by individual subjects in the grades, as is done in the high schools and colleges.** The alleged advantage of this system of school organization is that the pupil will be required to repeat only the subjects in which he is deficient. Only limited use, however, has been made of this expedient.

5. The organization of all school activities in accordance with the principles of an efficient teaching technique and the demands of mental hygiene. Indubitably, many pupils who fail in their studies would put forth greater effort and respond successfully if the rank and file of teachers would vitalize their instruction by the use of effective methods and devices, dynamic incentives, concrete presentations, vital projects and cores of correlation, and constructive activities which appeal to the children's instincts, nascent interests, and felt needs. If all instructional and school activities were organized in accordance with the requirements of an adequate system of mental hygiene, the child's whole personality would be harmoniously developed, the instincts and the emotions would be properly controlled and sublimated, healthy attitudes toward all the problems of life in school, out of school, and after school would be engendered, economical and desirable habits of feeling, doing, thinking, and studying would be formed, wholesome interests in objective realities would displace morbid ruminations and vitiating introspections, the child would be freed from auto-erotic, infantile, and selfish fixations, and from phobias, misconceptions, superstitions, conflicts, repressions, and inhibitions, and his energies would be liberated for wholesome, constructive, and creative activities.

Permanence of the special-class type of organization versus the transitoriness of other expedients. While subject to obvious limitations and drawbacks, practically all of the above plans and expedients for adjusting the school work to the needs of the school laggard and for reaching the individual pupil possess elements of merit of various kinds. Nevertheless, most of the plans have enjoyed merely a temporary vogue, or have been employed only in limited areas. They have eventually been forgotten or abandoned. But this fate has not befallen the system of segregating mentally

deficient and backward children in special classes. The special-class type of organization has enjoyed an unbroken continuity. Very few large school systems have ever abandoned their system of special classes for mental inferiors, and to-day the number of special classes is relatively larger than ever before in the history of the American public schools. This is, no doubt, due partly to the great relief afforded the normal pupils and the regular grade teachers by the removal of the holdbacks and the drags, who impeded the progress of the class and created difficult problems of discipline, and partly to the benefits conferred upon the deficient pupils themselves, who responded in the special class as they had never responded before, owing to the stimulus of individual attention and guidance, of differential training adapted to individual needs, and of the personal touch of a sympathetic, understanding, and properly trained teacher. Judging by the present indications, the special-class type of organization has come to stay, at least for a long time to come.

Contributions of the modern testing movement to the discovery and differentiation of educational deviates, to the art of educational therapy, and to school organization. The recognition of the existence of a high degree of variability or of pronounced individual differences among elementary-school children of the same age or the same grade classification, and of the need of differential instruction to meet the requirements of pronounced educational deviates, antedated by decades the intelligence-test and achievement-test movements. Nevertheless, from the intelligence-testing movement, which had not attained any appreciable momentum before 1910, and from the achievement-testing movement which did not arrive until later, we have derived not only our keenest and truest appreciation of the extent and implications of the problem, but also improved techniques for dis-

covering and differentiating the pupils in need of special instruction. On the other hand, the contribution of the modern testing movement has thus far been of much less significance so far as concerns the elaboration of educational schemes, plans, and devices, and the modification of curricula and of educative processes to meet more completely the individual requirements of the pupil material in the schools. The essential elements of most systems of corrective or remedial pedagogy or of instructional plans were elaborated many years ago, as has already been shown in part. The manual method of teaching the deaf child was devised prior to 1620, and the oral method prior to 1740. The embossed-line type for teaching the blind child was in use by 1786, the Braille point type by 1825 (or 1829, according to *Americana*), and the New York point type by 1868. The methods for training the feeble-minded were elaborated between 1800 and 1850. The testing movement has not wrought any essential modifications or contributed any basic innovations in the teaching technique or in the methods of adjusting instruction for these primary groups of educational defectives, or for children less gravely deficient in their sensory, motor, or intellectual equipment. There is nothing unique or original about the practice of sectioning children into rapid, average, and slow divisions on the basis of intelligence tests, which nowadays is vigorously advocated by the makers and users of these tests, nor is there anything ultra-modern in the vigorous, organized propagandas and drives of our own day in behalf of superior or super-normal children. Nevertheless, the educator of to-day possesses instruments which enable him to diagnose and differentiate educational deviates, and prescribe for their educational treatment more intelligently than the educator of a few years ago was able to do.

Ratios of different levels of ability among grade pupils.

The limits of this volume do not permit a review of the numerous studies made in Europe and America of the prevalence of mentally defective and inferior persons in the general population and in the schools, nor is it possible to enter into a critical evaluation of the methods of investigation employed or the conclusions reached. I shall merely venture to present a very tentative estimate of the relative distribution of the different grades of ability found among elementary-school children in the large urban school systems of the country, which I regard as fairly conservative.

Mentally deficient children — rather less than one per cent.

Not all of these will prove to be feeble-minded in the socio-legal acceptance of the term.

Backward and borderline children — from three to five per cent.

This includes children who are so backward in general intelligence as to be in need of special aid and instruction in ungraded classes, or prevocational, vocational, or elementary industrial schools. Some of these, however, will in the end prove to be restoration cases.

Children retarded in one or more mental functions or school subjects — about twenty per cent.

These children can get along fairly well in the regular grades, although they would profit from special aid on part-time or temporarily. They would naturally be assigned to "slow" sections where the children are sectioned according to ability.

This gives about twenty-five per cent on the minus side of the curve of distribution. But some of these will prove to be restorable, while many of the others will possess mental, physical, and social assets which will enable them not only to earn their livelihood, but achieve distinct success in various walks of life.

Normal or typical — about sixty per cent.

This figure is not identical with the theoretical average or median.

Bright or capable — about ten per cent.

Distinctly capable, talented, or precocious — about five per cent.

This places about fifteen per cent on the plus side of the curve.

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CHAPTER VII

THE OBJECTIVES OF THE SPECIAL CLASS FOR THE MENTALLY DEFICIENT

ALTHOUGH the discussion in the remaining chapters of Part II relates primarily to classes for mental deficients, many of the remarks apply equally well to the ungraded classes for the borderline and backward. In this chapter will be discussed five important functions or aims of the special class.

1. **The special class as a center for scientific observation and diagnosis.** The special class or special school should be conducted as a *genuine experimental, observation, or diagnostic* school, in which (a) the children's mental, educational, social, moral, and physical peculiarities, abilities, and disabilities will be thoroughly, systematically, and continuously observed and studied by competent teachers and investigators with the aid of the best technique which modern science affords; in which (b) special educational processes, methods, devices, and appliances may be devised, tested, perfected, and applied, so that the training may more fully overcome the special weaknesses and develop the special capacities or talents of each child; and in which (c) the results of the instruction may be carefully checked and discriminat-ingly evaluated by systematic follow-up work.

Benefits from scientific study. Let no one imagine that all this careful work is futile and superfluous, on the ground that we now know all that is worth knowing or can be known regarding the educational, social, and physical care of the mentally underprivileged child. The gaps in our knowledge are still very wide. If the classes are conducted as scientific, diagnostic schools, we shall acquire a body of useful attested

knowledge regarding abnormal children which cannot be secured by the present haphazard methods of unrecorded observation. We shall discover that the classroom teacher is beginning to form the habit of consciously, deliberately, and continuously attempting to adapt and readapt the instruction to meet the developing needs of each child; while the scientific student of education will eventually discover the methods, processes, aids, and materials which are the most effective in the training of various grades and types of defectives. The conclusions reached will be of value not only in the elaboration and systematization of the corrective pedagogy for the mentally handicapped, but also for the education of normal children. The case data accumulated will, finally, be of very great service for vocational guidance, enabling the counselor to give more intelligent and accurate recommendations regarding the after-care needed by each child and the type of employment for which he is best suited. The alert, intelligent special-class teacher has incomparable opportunities for discovering the special weaknesses, talents, skills, and interests possessed by the children who have been under her observation, many of them for many years.

Conditions essential for scientific, diagnostic special-class work. In order to realize this important ideal of special class work, two prime essentials must be supplied. First, the classes must be placed in charge of scientifically-minded teachers, particularly those who are psychologically minded, who possess special training in applied psychology, and who are imbued with the problem-solving attitude, that is, the inclination to wrestle with problems, and to return to the work day by day as a problem calling for fresh analysis and progressive solution. In the second place, continuous case records must be kept and preserved in permanent files which should afford a fairly complete record of the child's mental, moral, social, educational, and physical peculiarities, and the

progress made in the various curricular activities offered in the special school.

2. **Differential instruction as a goal.** The special class is designed to give the child special attention and individual instruction. This aim is perhaps more frequently stressed than any other. In fact, these classes are frequently denominated schools or classes for individual instruction. However, such a designation expresses very imperfectly the real function of these classes, for the aim should be not merely to give the child more attention, more intensive instruction, or more drill in the regular program of studies, but to individualize the instruction so that it will meet specific needs. In large measure the major problem may be defined as that of supplying a different course of study, or differential training, to meet the particular requirements of each registrant.

Requirements for differential instruction. In order to realize this objective, it is essential that each child be properly inventoried by the examining psychologist and the teacher with respect to personality make-up, especially so far as concerns his instinctive, emotional, social, volitional, motor, intellectual, and educational traits. The teacher must know what the child's psychic assets and liabilities are before she can wisely plan a course of study that will meet the conditions and needs actually revealed in each pupil.

The possibilities of group instruction. In thus emphasizing the paramount necessity of supplying individual and differentiated instruction it is scarcely necessary to repeat that it does not follow that all special-class pupils must be taught singly in all branches, and that the instruction must be entirely *sui generis* for every pupil. Many children subject to the same degree or type of defect, or who have reached the same level of proficiency in the work of the school, or who require approximately similar treatment, can be taught in groups, if not in all branches at all times, at least in some

branches a part of the time. In general, the nearer the children are to normal the more nearly can the methods and procedures of the regular grades be employed, while the greater the abnormality the more individual and differential must the work be, and the more aid and supervision will the children require. The brighter pupils may be given lesson assignments for seat-work preparation and class recitation, particularly in spelling, reading, and the fundamental number processes. Instruction may be given through the printed page, much as in the regular grade, although the emphasis should be placed on oral presentations for most of the mentally defective. In using the methods of mass, class, or group instruction, however, the needs and interests of the individual must not be sacrificed, or even subordinated, to the demands for routine, symmetry, and uniformity which go with the handling of groups — except in the classes in which the method of individual instruction has been introduced.

Possible methods of grouping children for instruction. Various methods of grouping the children have been suggested.

(1) *According to intelligence age level.* The method most frequently advocated is to group the children according to their “mental” or “intelligence” age level as determined by intelligence tests, particularly the Binet-Simon. Although this method has been urged as the exclusive basis for grouping, its limitations are quite obvious. Children of the same intelligence level do not necessarily require the same educational treatment. A twelve-year-old with a four-year mentality does not require the same treatment as a six-year-old with a four-year mentality, nor would they fit into the same group. Nor do children of the same intelligence level necessarily possess the same degree of proficiency in the different branches of the curriculum. Some will possess special weaknesses or special talents in some subjects, others

in other subjects. Some will be farther advanced educationally because they have been in school longer or have applied themselves more diligently. The writer preserves a vivid recollection of a visit to a class of "defectives" grouped according to "mental age." The group was exceedingly disparate or conglomerate from the standpoint of chronological age (varying from nine to fifteen years), and educational attainments in reading and arithmetic (the two exercises observed). Although classified according to mental age there was a difference of two or three grades in the proficiency level of the pupils in these branches.

(2) *According to I.Q.* A second method, advocated almost as frequently, is to group the children according to their I.Q.'s — that is, according to their relative degree of brightness or potentials for future development. Attractive and valuable as is this method, it is subject to rigid limitations in practice. The chief weakness of the I.Q. is that it tells you little about the child's mental or educational age. Children of the same I.Q. may differ very greatly in their intelligence level and stage of educational advancement. Thus an I.Q. of 50 would mean a mental age of three years for a six-year-old, of six years for a twelve-year-old, and of eight years for a sixteen-year-old. Children of such widely varied diagnoses,¹ mental age levels, and inequality of schooling could not be effectively grouped together for purposes of instruction.

(3) *According to A.Q.* In accordance with a more recent suggestion children should be grouped in the different branches according to their A.Q.'s (accomplishment quotients²), which express their educational attainments in rela-

¹ According to the current standards the first two would be classified as imbeciles and the third as a moron.

² Obtained by dividing the child's intelligence age into his educational age, as determined by standardized educational tests. (See page 80.)

tion to their mental capacities, or indicate the quality of work which they may be reasonably expected to do. This criterion is of value provided the age scores in the intelligence and educational tests have been accurately standardized. We have seen children quite improperly classified, based on the work they were actually able to do in class, because too much confidence had been reposed on inaccurate test scores.

(4) *According to similarity of disability.* A fourth method consists in grouping together children who suffer from similar handicaps, such as ocular or auditory defects, orthopedic disabilities, speech defects, and the like. The virtues of this method are quite obvious.

In the author's judgment, a satisfactory classification of a pupil for instruction must take into consideration his level of attainment in the various school branches at the time, his special educational abilities or disabilities, his intelligence level, I.Q. and A.Q. It is most important to guard against the tendency to make a fetish out of the intelligence level or I.Q. standards of classification. Children cannot be satisfactorily classified solely on the basis of the intelligence age or I.Q.

3. *Happiness as an objective.* A third function of the special class is to make the children contented, happy, optimistic, and ambitious. It is known that agreeable feelings facilitate the normal functioning and augment the output of energy of the organism, while unpleasant experiences tend to inhibit the functions, depress the spirits, and devitalize the organism. The Training School at Vineland is a living embodiment of its famous motto: "Happiness first, all else follows." It is necessary to emphasize this objective in special-class work, because these children are at best unfortunate — always unfortunate in their mental limitations, which are frequently ineradicable, sometimes in their attitudes, often in the home treatment which they have received. Some

have suffered neglect or abuse at the hands of the parents or siblings. Some have even been debauched in the home. Many have frequently been unfortunate in their contacts with other children, and in their experiences in the grades, where they have become discouraged by the fruitless attempt to master incomprehensible subject-matter.

The special class as a real home. The special class should be a real home, arranged so far as possible like a real home, which will let sunshine into the souls of the pupils who may have grown sullen, ill-tempered, pessimistic, cynical, ambitionless, and who have lost their grip on life. The special class must give such children a new vision and outlook upon life. The teacher of these classes must in very truth stand in the relationship of *locus parentis* to the children. She must be a mother (or at least a godmother) to them, actuated by the sympathy and unselfish devotion of the real mother. If she is a real teacher, she will be the best mother many of these children have ever had.

Healthy vs. morbid sympathy. However, in attempting to achieve this important aim, the teacher must guard against the tendency to become morbidly sympathetic. If she permits herself to brood over the children's misfortunes, her sympathy may become pathological and lead to introspection, introversion, morbidity, dejection, and inaction. There is no place for this kind of sympathy. The teacher needs the type of sane, robust, balanced sympathy which will stimulate her to exert her best efforts in behalf of underprivileged children.

No doubt this objective is sometimes given exaggerated importance. There may be teachers who conceive their sole function in the special class to be that of "mothering" the children and making them happy. Hence it is necessary to emphasize two further aims which are of cardinal importance.

4. Utility as a major objective of special-class training.

The special class must aim so to train the pupils that they will become maximally self-supporting, or as slight a burden to society as possible. Therefore the controlling principle in the organization of the program must be the practical utility of the subject-matter taught. The dominant emphasis must be placed on the practical, utilitarian, or vocational, rather than on the cultural or academic objectives. Because of the fact that the training of mentally inefficient children requires a heavy financial outlay by the schools, and because the care, control, and support of the feeble-minded impose, even under favorable conditions, a heavy burden on society, the paramount duty of the schools is to maximally increase the children's productive efficiency, so that they will, so far as possible, carry their own weight, and so that they will not gravitate to the ranks of the vagabonds, paupers, dependents, and delinquents. The special classes must set themselves resolutely to the task of stemming, so far as possible, the swelling tide of social and industrial incompetency, inadequacy, criminality, and degeneracy. The processes of educational reconstruction, while they cannot produce miracles, will overcome delinquent tendencies and develop sufficient competency for self-support in many subnormals, of which more in the latter part of the chapter.

How to accomplish the utilitarian objective. · How can this basic objective of special-class work be practically achieved in highest measure? In two ways:

(1) By supplying sensori-motor, manumantal, industrial, and vocational training which will not only develop manual dexterity, muscular skill, skill in the control of material forces, and in the manipulation of mechanical or industrial processes, but which will also develop intelligence and judgment in dealing with such processes, and with the civic, industrial, and economic problems of the workaday world. The training should develop brain power no less than hand

power. It should develop thinking by doing. Ideally the special classes, especially the shop classes for high-grade children, should aim to develop specific vocational skills through definite and varied trade and craft training.

Difficulties of supplying trade training. But the difficulties of realizing this objective are almost insuperable. It is far easier and much less costly to supply a rich curriculum of developmental or educative manual and industrial arts training than to supply training in definite trades or crafts which will prepare the child for a definite job when he leaves school, and which will be certain to "carry over" into his after-school occupations.

The difficulty of supplying vocational training which will "carry over" may be illustrated by citing the situation respecting two of the most representative industrial activities conducted in the special classes throughout the country, namely woodwork and basketry.

Woodwork. Woodwork possesses high value from the standpoint of the ease with which wood can be manipulated, modified or transformed into a great variety of objects, from the standpoint of the motor and muscular development afforded from working in wood, and from the standpoint of the practical utility of the objects made. The objects made can be put to practical use in the school and in the home. Woodwork performs excellent service in supplying vital cores or projects around which to correlate much of the literary instruction. Most deficient children highly enjoy working in wood, and many acquire very considerable skill in the handling of the tools and in the manufacture of objects. Nevertheless very few will be employed in woodwork after they leave school. Very few become carpenters or cabinetmakers. In tracing the records of 1969 children ¹

¹ Not all of these children were feeble-minded. The history of 436 was unobtainable. Four hundred were still in the special schools.

who had been enrolled in the St. Louis Special Schools for Individual Instruction during a period of twelve and a half years (68.5 per cent of whom were boys), I found that only one was reported to be a carpenter and only two painters (although others probably had followed these trades at one time). Obviously it would not be advisable to train these children specifically for carpentry since practically no one becomes a carpenter, although the value of training defectives in woodwork is unquestionable.

Basketry. Weaving in reed and raffia, and particularly making baskets, constitutes perhaps the most prevalent type of handwork offered in the special classes, for reasons not difficult to find. This work offers a very wide range of application. Low-grade pupils and beginners can be started on very simple raffia and reed objects (such as table mats), while the older and higher grade pupils can continue to work at more complicated and elaborate objects for years. Weaving in reed and raffia is a capital activity up to a certain point for developing the strength and coördination of the fingers. As a form of busy work it is, from one point of view, unexcelled. The work is so slow that the pupil can be kept employed for weeks or months on the same basket, thus relieving the teacher from much planning or supervision of the seat work. Perhaps this is the chief reason for its extensive employment, as it is also the chief reason for the futility of much reed and raffia work. Inattentive, automatic, slovenly repetition of the same weaving movements day in and day out, the type of seat work sometimes observed, is stupefying and without educational value. Unless there is planned progress and sufficient diversification to create genuine problematic situations, basketry may become a prolific source of wasted effort. It is justifiable as an educational exercise only so long as it makes for the development of power, skill, and appreciation of artistic or useful products.

But, although the objects made possess considerable intrinsic value, the value of basketry in preparing the children for a specific occupation is slight, for apparently very few children leaving the special schools engage in work with reed or raffia. Only one of the St. Louis ex-special school children investigated was employed in a basket factory. Apparently reed work does not develop a form of skill which will be directly applied after school.

Basis for the selection of types of utilitarian training. Ideally, in planning the program of practical training in the special schools, we should go out into the community and find out what the community wants, then train the pupils for the specific types of service required in the locality where the children reside. What kinds of jobs or trades does the community offer? What jobs are suitable for subnormals? What standards of skill are demanded for each kind of job? How are workmen most efficiently trained in the industries for different occupations? But, based on the findings in our St. Louis survey, it would be well nigh impossible to put this ideal into practical effect. The amazing thing revealed in this survey was the great variety of occupations which the ex-pupils entered, and the difficulty of finding any "typical" jobs which they were following and for which they should be trained.

Occupational pursuits of ex-special-class pupils. The most frequent occupations among the boys were: driving wagons or automobiles (29 instances), working in shoe (17), box (12), and stove (8) factories, selling newspapers (10) or delivering telegraph messages (8), and working in grocery stores (8) or bakeries (5). Twelve were in the army and five in the navy. Some were errand, delivery, or bell boys, car-track repairers, or fruit vendors. Others were employed in drug stores, butcher shops, vegetable commission houses, saloons or breweries, picture shows, tailor shops, stone yards, car shops, foundries, or factories, including barrel, screw, buggy, shovel, basket, bag, hemp, furniture, trunk,

coffin, pipe, soap, macaroni, shirt, and tile factories. Of the girls, there were five each employed as maids, or workers in stores or tobacco factories. Others were employed in drug and candy stores, restaurants, millinery shops, hair-dressing parlors, dyeing establishments, laundries, printeries, shirt factories, or tailoring establishments. A much larger proportion of girls than boys were employed in some capacity at home.

It is perfectly obvious that the schools could not attempt to train pupils for all these occupations, or even a fraction of them; nor do the findings indicate unambiguously the trades which could be most successfully taught in the school.

Aim to approximate vocational ideal. While, therefore, the chief aim must be to supply a considerable variety of basic developmental hand, prevocational, or industrial arts training in all the special schools, it is well to approximate so far as practicable the ideals of semi-craft or semi-trade training, or even limited vocational training for the older higher grade cases, especially in the shop or vocational centers or in part-time continuation centers. There is one way in which training for life may be given in a very practical way in the special schools, and that is to have the pupils do things which have a direct utilitarian value at the time. Let them mend their wearing apparel, repair their shoes, repair school furniture, make school furniture, furnishings, supplies, didactic materials, bandages, or towels, prepare and serve daily lunches in the school, wash the school dishes, cabinets, and towels, take their turn at laundering and scrubbing, and so on.

It may not be superfluous to suggest that use be made of the regular manual training and domestic economy centers when the special classes are without proper equipment, although such an arrangement usually precludes effective correlation of the hand training with the literary instruction offered in the special school.

(2) The second way in which to realize the basic utilitarian objective, or to make the training "carry over," is to institute a system of vocational guidance or after-care, particularly so far as concerns the children who must go to work when they leave the special classes and those who are not properly supported, protected, or controlled. This service is needed for the purpose of saving as many children as possible from failure, and for the purpose of gathering reliable data bearing on the benefits received from the school training, on the degree of practical success achieved by different grades of deficient, and on the best methods of dealing with these children in the future, both in and out of school.

What vocational guidance involves. A reasonably comprehensive system of vocational investigation and aid would include the following lines of endeavor:

(1) *Investigation of the individual's personality make-up, vocational aptitudes, inclinations, and contraindications.* The aim should be to discover, largely from a scrutiny of the analytical reports already mentioned, the particular crafts or occupations for which the children are peculiarly adapted or unadapted physically and mentally, and any special inclinations and talents. It is important to determine whether there are any occupations which are especially contraindicated because of violent antipathies, or definite physical defects, or predisposition toward certain diseases. Obviously, certain occupations would be disastrous for a child with a tubercular diathesis, or with heart disease, or serious impairment of vision or hearing. It is similarly important to determine whether the child has the requisite intelligence and mechanical skill required in various occupations, but it is even more important to determine whether he has an inclination for the work. To force a child into types of employment which he abhors is to court failure, no matter how capable he may be. We shall reap the best results when we try

to discover the child's special predilections and talents, then fit him for types of work which he wants to do, and finally place him in such work. Not one whit less important for scientific vocational guidance is the inventory of the child's emotional, temperamental, and instinctive peculiarities, which intimately condition an individual's industrial and social efficiency. The unstable child, even when possessed of good or fair intelligence, has a passion for change, variety, novelty. He is chronically dissatisfied with his old job. It is "too hard," "too unremunerative," "the hours are too long," or "the boss or his fellow workers are not agreeable." Hence he is frequently looking for another job, for a genuine snap, for a bed of roses, which he rarely finds. Because of his shiftlessness and instability, he readily acquires anti-social attitudes, and easily drifts into criminal modes of behavior, while he is sometimes aggressively criminalistically inclined. On the other hand, even mentally defective children of medium grade who are not subject to emotional or nervous instabilities, but are stable and trustworthy — and there are many such — are capable of sustained application and may be expected to hold a routine position for a long time. It is of paramount importance to consider the child's emotional and temperamental make-up in programs of scientific vocational guidance.

(2) *The making of an inventory or vocational survey of the positions available for mental deficients in the community.* This should include the listing of the positions which come within their limited range of vocational skill and general ability and interest, the initial rewards of each job, the rate of advancement, the steadiness of employment, the ultimate effects of the employment upon the worker, physically, mentally, and morally, and the moral hazards of the environment to which the child will be exposed. It is not suggested that subnormals should be shielded from drudgery, and from

all forms of disagreeable labor. Some one must do the more dreary and less desirable work of the world. Industry and society as now organized would survive with difficulty without armies of mediocrities to do the simple, routine, monotonous, blind-alley work of the world. Fortunately, mental defectives are not averse to work of a routine nature. This is the type of work in which they excel, because of their ability to form habits of high degree of dependability in simple routine situations. It is, however, vital to suggest a slightly different consideration, namely that children who are highly suggestible and easily dominated and led astray should not be placed in environments in which they will be subjected to moral and economic exploitation.

(3) *The conducting of a placement or employment agency*, charged with the responsibility of finding situations suited to the interests and capabilities of the applicants. This is all that some "vocational guidance bureaus" attempt.

(4) *Follow-up aid and investigation*. The purpose of the after-school service (which can be rendered by visiting or special-class teachers, social workers, attendance or parole officers, or volunteer welfare workers) is to aid and encourage the children, build up their morale when they are failing, find new positions for them when necessary, safeguard them from temptation, exploitation, and criminalistic careers, advise them regarding the conservation of their earnings, and their physical and moral health, and regarding their social obligations, confer with employers concerning their welfare, and advise the parents concerning measures which need to be taken for the child's future social and economic welfare, which, in many cases, will mean custodial care or colonization. These vocational aides, however, must assume the rôle of friendly personal and vocational counselors, always willing to act as unselfish intermediaries between the child and the parents, on the one hand, and between the child and

the employer, on the other hand. In spite of its cost this type of service is an economic measure. It will prevent much inefficiency, pauperism, and crime, and enable many defectives to lead a happy, useful, and economically independent existence, as has been abundantly demonstrated in the case of defectives paroled from institutions or leaving public school special classes.

The Detroit plan may be commended because it enables the teacher to bring to bear an impelling incentive on the child to "make good" at his job. At about the age of fifteen the child is placed in a position on part-time. If "fired" because of negligence or inefficiency, he is obliged to attend school on full time until it seems expedient to give him another trial. Under such a plan it is possible to discover the children's specific weaknesses and supply definite corrective training.

There is, however, another objective of special-class work perhaps as important as that of training the children to become maximally self-supporting, namely:

5. The training of the pupils to become self-respecting, law-abiding, altruistic, efficient companions and citizens. The special schools must strive, perhaps even more earnestly than the regular schools, to develop good, loyal, patriotic citizens. Mental inferiors are peculiarly in need of instruction and practical training in the fundamental personal, social, and civic virtues. They are frequently conspicuously deficient in the traits that lie at the base of a healthy social or civic consciousness, in an understanding of the ideals on which a successful democracy must be based, in the feelings of respect for law and order and the rights and prerogatives of other people, in the appreciation of their duties to others and to themselves as self-respecting individuals, in the ideals of personal honor, and in the sentiments of patriotic devotion and the feelings of obligation and willing submission

which they should harbor to the State, which to them often represents a meaningless entity or barren abstraction. Not only must we attempt to develop proper ideals, sentiments, and modes of response with respect to the social and civic relations of life, but we must develop habits of industry, good craftsmanship, and thrift, and a desire to be helpful, to contribute a just share to the common weal, to be four-square in business relations or vocational pursuits, and to render a dollar's worth of service for a dollar's worth of pay. One of the tragedies of the age is the widespread contempt for honest toil and the desire to escape work, which will tend insidiously to undermine the musculature and lay the foundation for racial deterioration.

Ultimate ideals of all special-class work. The correction of personality defects, the development of voluntary controls and inhibitions of anti-social proclivities, the inculcation of ideals, the strengthening of the individual's morale, the "building of character," the establishment of desirable personal, social, and industrial habits and attitudes, the development of the highest possible degree of vocational efficiency and the desire to be of service, are ultimate objectives of all special-class work, and all systems of instruction which minimize or ignore these objectives are one-sided, imperfect, and pernicious, and should be relegated to the scrap-heap of oblivion. Those special-class teachers have "measured up to their jobs" and have rendered a signal service to society, for which they are deserving of unstinted commendation, who have so trained the pupils that they will become maximally self-supporting, self-directing, and self-respecting members of society or of special communities or colonies which have been established for their benefit.

Results of moral and industrial training. Fortunately the large majority of subnormals are tractable, amenable to training, and capable of forming desirable and dependable

habits of response, socially, industrially, and morally, and of becoming partially or almost wholly self-supporting.

It is possible so to train many of the feeble-minded that they will be able to distinguish between right and wrong so far as concerns the ordinary virtues and relations of life. It is even possible to develop socially acceptable behavior in some mental defectives, especially of the stable type, who are incapable of clearly comprehending the social and ethical relations involved, or of foreseeing the ultimate consequences of their acts. It is possible to train mental defectives to inhibit their natural or instinctive anti-social promptings or criminalistic proclivities; to control and stabilize their temperamental, emotional, and impulsive tendencies; to substitute desirable for undesirable responses; to strengthen good tendencies; and to build up fairly reliable desirable habit patterns.

Evidences from St. Louis investigation. The truth of these statements may be shown from our investigation of the 1969 pupils who had been enrolled in the St. Louis special schools during a period of twelve and a half years. Only one boy had been accused of murder, and he was freed because of lack of evidence. Only 3.3 per cent of these pupils had been committed to an institution because of conduct disorders. The true number was somewhat larger, as no information could be obtained for 436 pupils. However, during a six-year period in which the reasons for the withdrawal of pupils from the special schools were accurately reported to the writer, only four per cent (of 566 withdrawals) were withdrawn because they were committed to an institution on account of misconduct. Of the 186 children examined by representatives of the National Committee for Mental Hygiene in the St. Louis industrial school for delinquent boys, only four had been registered in the St. Louis special schools, and of these only two were pronounced feeble-minded by the examiner (T. H. Haines).

Many of the children were persistent truants in the grade schools, but only 4.5 per cent (36) of 787 enrolled in the special schools during a three-year period had been truant at any time. The special school régime kept them in school, although not all, of course, responded. One boy had been truant 113 days, one 65 days, one 46, one 40, and one 27 days. These five were responsible for 291 of the 408 days of truancy. Some of these pupils corresponded to the classical type of unstable, excitable, truant, irresponsible mental defective.

According to the estimates submitted by the special school teachers, only 16.5 per cent of the 1969 ought to be committed to a State colony because of lack of intelligence, criminalistic proclivities, or inadequate home care. The number judged to be in need of institutional restraint because of criminalistic or delinquent tendencies amounted to not quite three per cent.

Our findings with respect to the small proportion of mentally defective children who were aggressively criminalistically inclined coincides with the estimates made by various authorities (see page 350). Of course, these figures are larger than the ratios which would be found among the children in the regular grades, but they are very small compared with the claims put forth repeatedly during the last decade and a half, namely that all mental defectives are potential criminals or are criminally inclined and that, in point of fact, most delinquents and criminals are mentally defective.

It was impossible to obtain an accurate detailed industrial record of all the children who had left the specials, or the wages which all of them were receiving at the time of the investigation. Many were self-supporting (but backward children had been admitted to the schools, particularly during the early days), and most of the others partially self-supporting. The teachers estimated that about seven per cent

of 374 in the schools at the time would become wholly self-supporting, 17.6 per cent three quarters supporting, 27.8 per cent half supporting, 27.2 per cent one quarter supporting, and 20.3 per cent totally dependent. The estimates were based on ability plus personality make-up. Individual studies made by the writer and others show that ex-special-school children with a mentality of nine or above have acquired enough capacity to make a living at some useful form of labor if temperamentally stable and properly environed.

A not inconsiderable portion of these favorable results is due to the effectiveness of the special-class regimen in holding the children in school, in regularizing their instinctive and emotional tendencies, in developing habits of acceptable conduct reaction, thrift, industry, hand skill, and skill in various vocations, in instilling proper moral and social ideals, in forming ideals of efficient craftsmanship, and in developing proper morale and *esprit de corps*.

Illustrative cases. We could cite many instances from our files showing how obstreperous children will respond to intelligent treatment and adaptable training. Two must suffice:

M. W., who came to the clinic at the age of 12.4 (Binet age 10, by the 1908 scale, I.Q. 82), was very unstable nervously, and suffered from an excruciating form of stuttering which threw his face into violent contortions and engorged the blood vessels when he attempted to speak. He had been excluded from school previously and was about to be excluded again for misconduct. According to the school report he was "very disobedient, he refuses to do his work, he disturbs the children around him, fights with the other children in the hall, takes things from them, has no respect for authority and uses the dirtiest and ugliest language in school and on the grounds. He is the embodiment of meanness." He was assigned to a special class with recommendations regarding his literary and industrial training, social and moral care, and the management of his stuttering. The genial atmosphere of the special class produced a well-nigh miraculous transformation. After six

months the teacher reported that he was "doing well, he has shown no disobedience, no vulgarity, and no outbursts." Ten months later the report stated that "the teachers have been surprised at his good behavior. He is contented, polite, cheerful, and only once has he used bad language." He was one of the most enterprising and successful newsboys I have known.

R. J. was reported as "habitually truant and incorrigible. He chews, smokes, and drinks. He is constantly in some kind of trouble in the room." At the age of 12.3 he had a Binet age of 8.4; I.Q. 68.3. He was assigned to a special school where he could be given work he was capable of doing. Five months later the teacher reported that "his attendance is very regular, attitude good, behavior good, although he has occasional fits of temper. He has improved wonderfully in reading and cleanliness."

The schools' responsibility in the prevention of delinquency. It is undoubtedly true that the schools themselves are responsible for much truancy and delinquency by attempting to force children to do work which they cannot do. This fosters a spirit of rebellion against the school and causes the children to become truant and delinquent, for truancy often leads to delinquency. In this direction the schools can do real preventive work, for they can prevent much truancy and delinquency by properly adapting the instruction to meet the needs of the children. The juvenile courts and reformatories get the children only after they have embarked on their career of delinquency. It is easier to prevent children from embarking on such careers than to reform them after they have already become delinquent.

The social and moral outlook for the well-trained ex-special school defective would not be altogether disappointing if the children were properly assisted and safeguarded after leaving school. The situation is not quite so black as it has been depicted during the last fifteen years.

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CHAPTER VIII

CONDITIONS ON WHICH THE EFFICIENCY OF THE INSTRUCTION FOR THE MENTALLY DEFICIENT DEPENDS

THE successful organization of developmental and reconstructive work for subnormals in the schools depends not only on certain important conditions to which we have already alluded, such as the removal of physical impediments, the adequate differentiation or classification of the pupils, the development of an adequate scheme of classes, divisions, or individual aid, and the explicit recognition of certain fundamental objectives to be attained, but it also depends to a very considerable extent on supplying certain teaching conditions on which the quality of the instruction depends more or less intimately and directly. The next two chapters will be devoted to the discussion of some of the more important technical didactic requirements which will insure efficient instruction for deficient, dull, and backward children.

1. Size of the class. One of the conditions most frequently stressed for successful special-class work is that the class enrollment must be small. In practice the registration in classes for the mentally defective or deficient varies from 8 or 9 to 20 or 25 in different countries and in different cities. The enrollment in the ungraded classes in New York City in 1916 varied as follows: 49 classes from 20 to 24 pupils; 155 classes from 15 to 19; and 8 from 10 to 14 pupils.

The writer's investigation of the practice in American cities in 1913 revealed that the established enrollment (from which variations were, no doubt, made without compunction) was 15 pupils per class in 42 cities, 20 in 9, 12 in 6, 10

in 3, 15 or less in 67 and 20 or less in 92 cities. In only 5 cities did the enrollment exceed 20. In New Jersey, New York, and Massachusetts, the classes are limited by law to 15.

Maennel recommends as acceptable standards 15 for the lower grades, 20 for the intermediate grades, and 25 for the higher grades, but it is not certain that he is referring only to mentally defective children. On the other hand, there are those who insist that there should be not more than four or five mentally defective children (as well as blind and deaf children) per teacher, while some private schools boast of the fact that each teacher handles only one or two pupils. The argument advanced in support of such rigid restrictions is that the teacher will be able to give the pupils more attention, aid, instruction, drill, encouragement, stimulation, and supervision, and therefore, the pupil will make more rapid and far greater progress.

Objections to small classes. Against the small classes, however, three serious objections may be urged:

Small classes too costly. The first is that it is too expensive to provide four or five defectives, who at best can never be trained to become leaders or to occupy responsible positions, with the most expensive form of instruction and educational equipment, and high-salaried teachers. Our chief obligation, it is argued, is to the normal, bright, hopeful, or only slightly retarded pupils. This objection is well-grounded, but only so far as it relates to the very small classes, for it must be emphasized anew that in segregating the mentally deficient children, the holdbacks, we are facilitating the progress in the regular grades of the normal and bright pupils.

Diminishing educational returns from oversaturation. It may be objected, in the second place, that the very small class is not educationally justifiable. The idea that an enormous amount of drill and intensive instruction will im-

prove mental defectives very much more than a reasonable amount of training, is erroneous. This was shown in an investigation in which standardized educational tests were given to the pupils from a private school with one teacher to each pupil and the pupils in the Massachusetts School for the Feeble-Minded averaging about twenty pupils to the teacher. The pupils from the private school did no better than the pupils from the State institution when those of the same intelligence ages were compared. Let us not forget that mentally deficient children can be surfeited by too much instruction. After they have reached the saturation point and cannot hold much more, you get less for your expenditure of labor. A safe principle to follow is to give children instruction and drill up to the point of their capacity to acquire in any subject. After that you get diminishing returns for your efforts. You cannot work miracles in the attempt to advance the educational or industrial status of mental defectives, or of any other type of defectives, by oversaturating them with drill and instruction. It takes the mentally defective more than the usual amount of time to acquire and digest, and to form habits. Stopping-places or resting-plateaus may even be necessary to enable the growing child to get his "second wind," or get his "hierarchy of habits" established for a fresh advance.

Positive advantages from numerous contacts. A further objection to wholly limiting instruction to very small groups, or to teaching pupils singly, is that children derive considerable benefit, socially and educationally, from the reciprocal give-and-take, from the social and intellectual interactions, and from the stimulation and interest which are aroused in properly conducted class exercises. The coöperative activities of a large group tend to excite more *verve* and enthusiasm, afford more personal contacts, establish a finer spirit of *esprit de corps*, more nearly approximate the team work in

practical life situations, and are thus more genuinely socializing than the activities of a very small group. Children may learn the lessons of practical life better from contact with numerous playfellows or team mates than from one or two elder mentors.

Suggested enrollment. The number of pupils who can be taught in a class (in which the instruction has not been departmentalized) with a reasonable degree of success will vary according to the gravity of the deficiency of the children, according to the homogeneity of the group, and the nature of the subject-matter taught. The teaching of a group of twenty evenly graded defectives would be no more difficult, nor heavier from the standpoint of the teaching load, than the instruction of fifteen defectives of all grades.

As reasonable standards for the public schools may be suggested a registration of from fifteen to eighteen in classes for the mentally deficient, and from eighteen to twenty-five in classes for the borderline and seriously backward, according to the degree of homogeneity of the class. For the classes as ordinarily constituted, we might fix the maximal enrollment for the former type at sixteen or seventeen, and for the latter at twenty-one or twenty-two. Groups of this size can be taught with a reasonable degree of efficiency, particularly if the seat-work is effectively planned and if some of the brightest pupils are trained to assist in the handling of some of the low grades.

2. Freedom in adapting instruction. A larger amount of freedom must be accorded the teachers of classes for both the mentally deficient and the backward than is usually countenanced in the regular grades so far as concerns the arrangements of the details of the program, the time for scheduling the various branches, the length of the periods, the degree of proficiency required before a child may be advanced, the dropping of studies, the substitution of new

types of work, etc. While there must be freedom from the lockstep, routine, mass procedure, formality, and relatively fixed requirements of the regular grades, this does not imply that the special-class teacher should not follow any program at all, or a planless, purposeless, haphazard program, as will be emphasized on a later page.

3. **Methods of instruction.** Use must be made of effective, adaptable teaching methods and devices; that is, methods and devices which tend to correct defects as well as to develop the child's mental and physical powers and functions. The work should be based upon a scientific system of "occupational therapy," "corrective pedagogy," "orthosomatics," or "orthophrenics," which involves not only the employment of effective methods of teaching, but also appropriate materials of instruction. We shall at this point consider somewhat in detail certain important principles of teaching in relation to the education of subnormals.

REMARKS ON TEACHING METHODS

1. **Adaptation of methods to individual requirements.** It would seem wholly superfluous to say that the methods and devices must be adapted to the child's mental and educational level and to his special abilities and disabilities. The principle has become a trite truism through repeated reëmphasis in the educational literature, and yet it would not be necessary to search very long to find evidence that this rule is habitually violated. For example, the same contents, devices, and methods of teaching reading are often used without modification with low-grade and high-grade cases, with normal and word-blind cases. And yet experience has shown that the ordinary methods, good as they may be for normal pupils, are not always effective with abnormals. To reach the individual you often must break away from the stereotyped methods and apply methods which are particularly

adapted to overcoming a particular child's defects. The alphabetic method of teaching reading, long ago discarded as archaic, will be found superior with some cases to the revered phonic, word, or sentence methods. When the child's special difficulties have been discovered, a mere change of method may produce remarkable results in apparently hopeless cases. Grace M. Fernald and Helen Keller have given instances of the remarkable progress made by non-readers when a method was applied which made extensive use of kinæsthetic imagery. Augusta Bronner cites the case of a boy with defective powers of audition, but with good visual powers, who was placed in a class for backward children because of his inability to do number work which was taught by the oral method. His parents, knowing of his powers of visualization, took him in hand and taught him by visual presentations. In two weeks he led his class, and in two years finished four years' work.

The sine qua non of remedial pedagogy. Effective remedial or corrective methods will not automatically apply themselves. To get maximal results the classes must be in charge of diagnostic teachers who will analyze the nature of the children's disabilities and adjust the processes and contents of instruction to meet their specific needs. Of this more in the next chapter.

Granting that low-grade children require more drill, more formal work, more individuation or differentiation, it may yet be questioned whether it is financially justifiable to give these children the advantages of highly individualized instruction. The following may be recommended as a conservative principle for deciding the merits of such cases: When it becomes evident that a low-grade child is incapable of making any considerable advancement, he should be excluded from school or retained for simple occupational training, and for the development of desirable personal attitudes

and habits. This training can be partly given by older pupils working under the teacher's supervision. Their care need not consume much of the teacher's time. Certainly these children are far better off in school than in some homes or on the streets, where they may get into serious social complications.

2. Types of teaching exercises and justification of drill.

All the well-recognized types of teaching exercises or processes have a place in the special schools. These teaching processes include: (a) Testing exercises, the purpose of which is to find out what the child has already acquired in school or out of school, and to what extent he has mastered a particular assignment. (b) Reviews, oral or written, or the testing of a series of lessons or exercises, for the purpose of reviving past experiences, connecting up various lessons, securing a more comprehensive grasp of the subject, increasing the number of associations, and fixing facts and relations in memory. (c) Drills, for the purpose of developing skill and fixing what has been acquired, either by formal repetitions (drills), or by applying the same processes to the solution of new problems. (d) Teaching in the narrow sense, which includes the imparting of information, the developing of knowledge, and the training of the child to discover facts and to solve problems for himself, and to develop the technique necessary for making such discoveries and solutions. In teaching, use is made of books, lectures, talks, discussions, questions, topics, outlines, drawings, pictures, models, maps, exercises, experiments, demonstrations, practicums, the solution of problematic situations, projects, and coöperative learning on the part of the pupils (a mode of procedure usually referred to as the "socialized recitation").

Mental deficient in need of more instruction and drill.

The use of some of these teaching processes will be discussed in later sections. At this point we pause merely to say that

many facts must be taught mental deficient children that need not be taught at all to normal children, because they acquire them incidentally. Moreover, many facts can be fixed in mental deficient children only by repeated drills which the normal children will retain from one presentation. Far more drill, repetition, and formal work are needed with the deficient and backward than with the normal and bright. But this fact is not without consolation, for we know that formal work and drill are effective with defectives, whatever the explanation — whether the formal drills develop the functions or increase the capacities (such as memory or attention), or merely form general habits of study, application, or attention, or merely develop a mental technique which will prove useful in varied situations, or merely remove obstacles to economic memorizing, attending, or developing various skills. It is generally agreed that training, whether formal or informal, facilitates the effective use of the mental powers which have been exercised. It makes the pathways of discharge more permeable.

Need of vitalized drill technique. It goes without saying that the teacher should make the formal exercises and drills as interesting, vital, and dynamic as possible, no less with defectives than with normals. They should be “sugar-coated” by the use of games, by the introduction of the playful element and the element of contest, by the use of rhythm, and by appeal to instinctive interests and natural incentives. Moreover, formal drill processes should be freely supplemented by the methods of incidental instruction and by problem and project work.

3. Method of development. Use should be made of the so-called developmental or heuristic method. Its vital precepts are: do not tell the child everything he does not know; do not show him everything that seems vague; do not solve all his problems or remove all his difficulties; on the contrary

confront him with problematic situations, let him grapple with them, and try to solve his own difficulties. So train the child that he will develop the power of independent inquiry. In a word, make your instruction genuinely educative, developmental, stimulative of mental growth.

Applicability to deficient. These principles are now a commonplace in the pedagogy of the normal child, but they are quite applicable to the training of subnormals, too, although the latter require more telling, more direction, more demonstration, and more use of imitation. There is a place for telling and coaching in the special classes, but we must not consider the defective child so impotent or deficient that he cannot be trusted to attempt to solve any problems for himself, but must be told everything, have everything explained, and have everything done for him. Give him every opportunity, with no more than necessary guidance, to attempt the solution of problems within his range of interest, understanding, and motor dexterity. Unless he is given such opportunities, one of the ultimate objectives of teaching cannot be realized; namely, so to develop the powers and capacities of the pupils that they will in time become independent of the teacher's tutelage. We can, of course, only realize this ideal in part with children who are feeble-minded.

How to apply the principle. To apply this principle it is necessary first to discover what the pupil knows or does not know, and then to lead him by skillful developmental questioning to discover what he does not know, by recalling known facts, by observing, comparing, analyzing, and thinking about facts and the relations between facts, and by expressing himself in words and action. The child should be permitted and encouraged to ask questions, but the teacher must not wait for the child to interrogate. She must make an active effort to explore his past experiences, discover his "apperceptive bases," and lead him through skilled "So-

cratic" or "developmental" questioning to advance from the well-known to the less well-known. In addition, the teacher must set vital problems for the child to solve which will oblige him to recall and apply facts and processes already acquired to the solution of the new problems.

4. From the known to the unknown. We should proceed from the "known to the unknown," building the superstructure of new facts, knowledges, principles, and skills on the solid foundation of the old and familiar. Begin with the child's level of attainment and knowledge, with the familiar facts which he has acquired in the home, in the neighborhood, in the home city, and in the school. Thus geography teaching is now begun with the child's immediate environment, his home, his block, and his city. Gradually his horizon is extended into the realms of the unknown — the State, the Nation, and the world. No solid superstructure of knowledge or understanding can be built on an insecure foundation of ignorance, superstition, or error. Therefore one of the teacher's first tasks is to probe, search, and discover what the child knows or does not know, what he can do or cannot do, and what he must know and be able to comprehend and do before he is ready to take the next step.

Frequent violation of principle. Although these injunctions have become hackneyed platitudes, it is unfortunately the fact that they are frequently violated in special-class work, mainly because of the tendency of teachers to take too much for granted. They proceed on the assumption that the child knows far more than he actually does. They frequently fail to get down to the bedrock of what the child actually knows, understands, and can do. They start on too high a level, and fail because the child does not possess the necessary control of the elementary processes and tools. Had they aided the child in getting control of the more elementary processes and tools, he would have been able to

solve some of the more complex problems himself. To illustrate: A child of about eleven who was referred as a suspected mental defective was remanded to an ungraded class as a slightly backward case for special coaching in arithmetic in which he was particularly deficient. The teacher was instructed with particular care to find the child's actual level of competency and build up step by step from this firm foundation, taking care that the child fully understood every step and that all the gaps in his knowledge of the arithmetical processes were properly filled. In spite of this recommendation, the report two months later showed no improvement. On the occasion of my visit to the school somewhat later, it became perfectly apparent that the teacher had not gone down low enough for her foundation work. The child's actual level of competency was nearer the first part of the second grade than the first part of the third grade. A fresh start was made from this bedrock of knowledge, with the result that the child did more than three grades of work during the ensuing year. This child's handicap was due more to a poor start than to genuine deficiency in number work. By building on the foundation of the known and proceeding from known facts to closely related facts, we shall further the progress even of children who are defective or who have specific defects.

Avoidance of treadmill repetition. It is, however, necessary to insist that, after the child's level has been ascertained, there must be no dawdling through constant repetition of what the child already knows and can do. There must be constant advance. A process should be dropped, at least temporarily, after it has served its purpose.

5. From the simple to the complex. This principle, emphasized in the old pedagogy to the point where it became axiomatic, seems to be out of harmony with the project method and problem-solving method now largely used in the

schools for normal children, in which practice or drill is secured as an incident to engaging in complicated projects, although, of course, it is possible with the use of this method to begin with simple projects and proceed to more complicated ones. With mental defectives, however, the proper gradation of the exercises or learning steps is frequently an essential condition of teaching success. To confront a low-grade mental defective with a complex problem beyond his powers of analysis or execution is to invite failure and discouragement. It is frequently advisable, therefore, to begin the training of young or low-grade children with simple exercises involving the use of the large, axial muscles, such exercises as walking, running, skipping, simple rhythmic exercises and games, sweeping, dusting, scrubbing, washing the blackboards, handling large tools, driving nails into a block of wood, first indiscriminately and then by filling in outlines, sawing scraps of wood with or without the aid of guiding lines, putting together a board and legs for a crude table or bench, lifting, carrying, and superposing bricks or large blocks, transferring stones around a circular field (an exercise used for imbeciles at Waverley), braiding with heavy twine, sewing with a large bodkin or using a large needle with sewing cards, making small mats, and the like. Such crude activities will afford muscular exercise, stimulate to exertion, develop control of hand, foot, and eye, and prepare the way for more refined and complicated adjustments. Germane to the discussion of this topic are the remarks of the following section.

6. Systematic, orderly progress. There must be a systematic sequence of steps and orderly progress in special-class work. It is not implied that there should be a rigid curriculum, with the steps definitely blocked out as in the regular grades. What is meant is that there should be constant advance in every branch of study. There is no place

in the special class for mere capriciousness, mere toying, or haphazard sampling of this, that, and the other activity without plan or progress. There are, my observation has shown, some special-class teachers who proceed without chart or compass. They jump from topic to topic without any order. They present disconnected fragments or lessons which are quite unrelated to each other. Their chief concern seems to be to fill in the time with activities of some kind, and to amuse or entertain the pupils. They undoubtedly feel that the children will get much of value in the process. There is, of course, no objection to presenting lessons entertainingly (provided the teaching exercise is not transformed into a mere entertainment or diversion), provided there is constant advance and progress in every branch, whether it is reading, arithmetic, spelling, or woodwork, basketry, or brush-making, but there is no place for helter-skelter, planless, arbitrary, fortuitous, and circuitous teaching in the special classes. Some order of progression must be followed in the development of interests, facts, or skills in every phase of activity, whether the order follows the logical sequence or the "natural" or "psychological" order of learning. There are those who believe there is a natural order of development, although the detailed steps have not been determined to a nicety.

Application to clay, wood, and metal. Thus, work in clay would "naturally" precede work in wood, while work in wood would precede that in metals. Ours was a race of molders a long time before it became a race of carpenters. The modern child delights to mold in clay and play in sand a long time before he is interested in, or capable of, molding in wood. Clay is far more plastic and easily manipulated than wood. The same clay product can be transformed into almost innumerable forms and objects.

Considering the course in clay modeling itself, a progres-

sive series of steps of increasing difficulty could no doubt be outlined, beginning with round work (the cylinder and ball, with their numerous possible modifications), flat design and tracery work on plaques, coil work, concrete work, glazed enamel work, faïence, pottery and pottery designs; however, clay, plasticine, and wax modeling can be taught successfully as accessories to other activities, and most teachers will probably prefer so to teach it.

Application to weaving and needlework. It would be equally easy to apply this principle to the teaching of weaving, knitting, sewing, and crocheting. The beginner, starting with crude weaving exercises, with the use of oilcloth strips or colored linen strips and slat weavers, will proceed to the use of the ordinary weaving frame strung with alternating colors (which will aid him to make the under and over movements properly), then proceed to raffia and reed weaving in connection with the making of crude mats and simple baskets (using reed that can be easily woven), then go on to rug- and carpet-making, first with the hand loom and then with the foot loom, then to sewing (first making crude objects, with large needles, starting with hand and proceeding to machine sewing), then darning or knitting, chair-caning (preceded by weaving easily manipulated flat reed), cord or macramé work of various kinds, and brush-making.

7. Objective and concrete methods. The methods and materials of instruction should be predominantly objective and concrete. Teach by means of things, objects, processes, activities, projects, representations, illustrations, dramatizations, paintings, cinema pictures, "object lessons," field explorations and excursions, the use of museum materials, and the like, rather than by means of words, symbols, verbal repetitions, rules, formulas, principles, or abstractions. Defective children are ordinarily "thing-minded" rather than

"word-minded," or "thought-minded." They are "eye-minded," "ear-minded," or "muscle-minded" rather than predisposed toward cogitation or reflection. They are instinctively interested in things, the doings of things, and in activities. They attend more readily to the visible and tangible, and more readily comprehend the concrete. Abstractions, or formulas and verbal descriptions, on the other hand, may be entirely incomprehensible if at all involved, and therefore do not interest them, command their attention, or lead to fruitful reactions. Moreover, manipulating objects creates problematic situations and breakdowns in the child's experience which he can easily understand, and which are far more potent in motivating his work than merely reading or thinking about situations, or working out intellectual solutions, the correctness of which he is incapable of determining.

Advantages of abstract thinking. While the view mentioned above is the accepted one and doubtless correct, it should not blind us to the desirability of leading the child, just as far as may be possible, to conceptualize, to think in abstract terms, and to understand the abstractions which are most intimately related to the practical concerns of his workaday existence. Abstractions are exceedingly economical instruments of control. The concept is a shorthand of thought, containing all the elements common to a class. It is a "rolled-up judgment" often containing a wealth of information whereby we can readily recall, condense, group, classify, and generalize our past experiences. By means of a verbal symbol we are enabled to refer to an illimitable number of objects without the arduous necessity of reënvizaging the individual objects. Clearly we must train the defective child to become as efficient as possible in abstract thinking, in forming correct concepts, and applying correct terms. He must be trained to compare, to note resem-

blances and differences, to abstract differences, to associate resemblances (that is, to generalize), to see the general in the particular, to draw conclusions possessing more or less general validity, to apply the generalized facts to particular cases, and to acquire a correct terminology.

Graded recession from the concrete. But in order to attain this difficult goal, it is necessary that the ascent or progression from the concrete to the abstract be made by very easy stages, from the more to the less concrete. The process may be illustrated from one of the methods used by Maria Montessori to teach abstract form to children. The child begins by handling solid forms. Then he superposes such forms on corresponding plane shapes on cardboards, the first set of cardboards containing forms made out of blue paper, the second set only the contours of the forms in a broad blue strip one centimeter wide, and the third set only the contour in a mere hair line. The progression is from the solid to the plane figure, from the broad contour to the narrow contour, and from this to the abstract idea. Such a fine gradation is not required by normals, but defectives find it difficult to pass from the concrete to the abstract by a sheer plunge. With defectives it is perhaps never safe wholly to discard the visible and the tangible. The abstractions must be constantly interpreted and revitalized by concrete reference.

8. The doctrine of interest. Proceed from the child's native and acquired interests. Interest supplies a powerful entering wedge, an "open Sesame" to the child's mind. To elicit a child's interest is to insure attention, secure ready, enthusiastic coöperation and maximal output of effort. Our earliest interests all rest on an instinctive basis, and all acquired interests have, perhaps, in the last analysis, evolved from, and represent sublimations of, instincts and native impulses.

Necessity of inventorying assets and liabilities in the field of the instincts. It is of utmost importance in the case of defectives to discover what instincts they possess, and what instincts are lacking. In the defective or abnormal child instincts are often lacking, excessive, abnormal, or perverted. This is frequently the cause of serious social or educational maladjustments. Unless these abnormalities are known, it will be impossible properly to interpret the child's behavior or intelligently to direct his activities. Thus we must, to illustrate, understand that idiots as a class lack certain instincts essential for mental growth; for example, the instincts of play, constructiveness, and curiosity. They are even deficient in one of the two fundamental instincts, the instinct of sex or self-preservation. Fortunately the vast majority possess the other fundamental instinct, hunger, which can be utilized as a powerful motive in their training. They will often respond to attempts at training when the appetite for food or drink is rewarded. Our efforts are not infrequently frustrated by perversions of the instincts, which result in the formation of undesirable interfering habits. Lightner Witmer cites a case ("Don") in which a condition simulating feeble-mindedness and excessive inattention to all new persons or things was induced by morbid fears. But when the fears were dissipated, the child's development proceeded with surprising rapidity. It is well not to forget that a defective child who is timid or subject to inhibitions, often unknown because hidden or obscure, suffers a grave double handicap. The treatment of fear, one of the great motive forces of human conduct, is of fundamental concern in teaching, but its significance is usually unrecognized or misunderstood. We forget that it is the whole child who goes to school, that it is the whole child who needs to be trained, and not merely a selected portion of his personality.

Utilize nascent interests. But we must not only attempt to list the child's assets and liabilities in the field of impulse, instinct, and acquired interests; we must also strive to understand how the instincts and interests change from year to year or period to period, so that advantage may be taken of nascent interests. "Strike while the iron is hot." Watch for the appearance of new interests, and occurrences which will serve as a point of attachment for a body of new interests.

It is well to ask ourselves what we ought to be teaching the child at different periods of development. Obviously the answer will depend to some extent on his budding interests. We should seek to determine the instincts and developing interests which lie at the base of any school activity, and then utilize them in creating other interests and attitudes. The resourceful teacher will find innumerable ways in which to do this.

The things we teach most successfully in the special class are those most closely related to the child's interests, native and acquired.

Application of doctrine of interest to manual work. We can put manual work across with these children because it has a vital appeal. It appeals to certain deep-rooted instincts and interests: play, constructiveness, manipulation, curiosity, acquisitiveness, activity, and muscular exercise. These natural forces can, however, be utilized more fully if the manual training is made to conform to the "natural course of development." While we are not now in possession of the facts which will enable us to determine precisely what this "natural order" is, it will be dependent to some extent on the nascent stages of interest, on the stages of maturation of the different muscle groups employed, and on the progression from the more simple to the more complex, as suggested on a preceding page.

We can ask many questions in this domain for which science has not yet supplied the answer. When shall the various types of tools be used — the hammer, the saw, the knife — or various types of exercises — the formal, the project? What should be the earliest form of manual work for children with poor muscular coördination? The usual answer is: begin with large tools, with tools that are easily handled, with coarse work, with work utilizing large muscle groups, and with materials that are easily manipulated.

Interest in relation to the project and drill methods. The attempt to organize the work more fully in harmony with the doctrine of interest has led, however, to the demand that the children should be started with project or problem work, or the manufacture of useful articles, rather than with formal drills or single operations. While this tendency is to be commended, many authorities possessing extensive experience with mental defectives of low grade or with serious muscular incoördinations feel that better results are obtained by developing partial or specific skills by formal drills on simple processes, such as those mentioned above in connection with the fifth teaching principle. To start a child who has no control of the tools or of the elementary processes on complicated problems will cause blundering, the spoiling of tools and materials, confusion and loss of confidence. It is emphasized that the purpose of the manual training at the outset for such cases is to improve muscular coördination, to develop hand skill, to acquire dexterity in handling the tools, rather than to produce an artistic product; that these results are achieved most rapidly by repeated drills, and that the method is not contrary to the doctrine of interest or the psychology of habit formation, because mental defectives enjoy repetition.

9. Correlation and project methods. Extensive use should be made of the method of "concentration" or "correlation,"

or of the problem, or project methods. The latter methods may be regarded as a recent adaptation and elaboration of the old method of correlation. The project method has been defined as a "problematic act involving the use of concrete material in a constructive way in a life setting, or in a natural setting," or as a "problematic act carried to completion in its natural setting" (J. A. Stevenson). The implications underlying this definition are: first, that the activity must duplicate the problems of life, in consequence of which the same materials (wood, iron, clay, etc.) and processes must be used in the school activities as in workaday extra-school pursuits; second, the problematic situation must demand reasoning instead of mere memorizing; third, the problem-solving activity must precede and lead up to the statement of the principles; and, fourth, the act must be carried to a successful conclusion. According to this definition, make-believe situations (such as the stock activities in the modern kindergarten) are not projects, although they may be problems. The problem emphasizes the intellectual solution of a problematic situation without the necessity of using natural settings.

The essential idea of the method of correlation is the grouping of instruction around a center, "core," or "project." The more subjects which can be effectively correlated the better the core. Three illustrations will make clear how the method may be applied in the special schools.

Illustrations: building a playhouse. The building and equipping of a playhouse or a doll's house furnishes a very fertile core around which to center many interests, activities, and subjects of instruction. In the building construction activities, abundant opportunities are afforded for wholesome physical exercise and for developing skill in the use of tools and acquiring knowledge of building processes, materials, and furnishings. Practical arithmetical training

is afforded in connection with measuring the dimensions of the various parts of the house, buying and selling tools, materials, furnishings, clothing, food, making up family budgets, and the like in the "make-believe" school store. Lessons in local and commercial geography reinforced by visits to near-by commercial and industrial plants, parks, and museums, are related to the study of the processes of production and distribution. Lessons in language and literature can be given in connection with the study of types of houses and the characteristics of the home life found among people of different races and stations in life. This may lead to the study of different races, or elementary facts in ethnology. Facts concerning the home life may be brought out: the relations between parents and siblings, the mutual duties and obligations which the members owe to one another, to neighbors, friends, fellow citizens, and to the State, love of home and love of country, family customs and traditions, and the like. Instruction in hygiene, physiology, and health can be given in connection with the care and hygiene of the house, art instruction in connection with the decoration of the playhouse, while practice in theme or story writing and telling can be obtained by having the child depict the various stages and activities connected with the construction of the playhouse, and his activities in his home.

Making illustrated booklets. The making of topical, monthly, or seasonal calendars or booklets (with everything converging around a designated theme, such as "Thanksgiving Day," "Christmas Time," or "Autumn Days") affords opportunities for preserving the busy-work in an attractive, substantial form, for correlating the busy-work with the various subjects taught during the recitation period, for making practical use of the knowledge thus gained, and for awakening demands for further knowledge and skill. What activities can be correlated around such an activity?

The measuring and cutting of the pages and covers for the booklet; the gathering, cutting, and pasting of appropriate pictures; the drawing in black and in colors of appropriate sketches; the making of calendar pages, with the numbers and names of the months and days; the writing of an appropriate story or historical sketch and memory gems; illustrating with colored sketches or the cut-out pictures; the singing of appropriate songs; and the dramatizing of certain events. Considerable practice can be secured by requiring a certain quality of excellence in the penmanship, composition, orthography, coloring, drawing, etc., before any page may be inserted.

Constructing a crude village. A major project which provided fruitful busy-work for all grades of defectives and sustained the interest during the entire year in a special school under my direction, consisted in the "construction of a village," along one side of the schoolroom. The houses, made of boxes brought by the pupils, were not elaborate or finished. The girls made homes and the boys shops. Each child was induced to express his own individuality and his own conception. Around this core were correlated: (a) language work, including discussion by the pupils of the occupations in the play shops, stores, and homes, which greatly enriched the vocabulary of the pupils, most of whom were Italians; (b) practical exercises in arithmetic, different pupils enacting the rôles of blacksmith, baker, grocer, butcher, hardware merchant, home-maker, barber, and the like; (c) practice in writing and spelling, in connection with "write-ups" about the stores and the homes in the play village; (d) drawing, including the drawing of the shops and houses, the goods on the shelves and counters, and articles in the home, properly labeled; (e) geography and nature study, including discussions of the kinds of buildings and domiciles found in their city, the United States, and foreign lands, and of the

materials used in the homes and in house construction, nails, lumber, sand, wool, cotton, silk, etc.; (f) observation lessons based on materials borrowed from the school museum; and (g) lessons in furnishing, decorating, and caring for the home. The low-grade cases acted as aides (for example, in carrying materials), and drew crude representations of articles sold in the shop. Each child preserved his written material in a large envelope. It is evident that many minor projects were correlated around this extensive major project.

This is the way much of the reading, arithmetic, spelling, writing, and manumetal activities should be taught in the special schools. Innumerable topics are available as cores, problems, or projects: New York Harbor, the children of the North, camping on the fishing bank, life on the farm, transportation systems, ventilating the home, our city block, baking a loaf of bread, or cultivating vegetables in the school garden.

Value of the correlation, problem, or project method
What are the specific values of this type of lesson?

(a) It is dynamic, or vitally motivated, thus arousing a high degree of interest, and sustaining the interest for long periods of time. The interest in the village construction activities referred to above was sustained at white heat during a whole school year, and at the close of the school year many children asked that the same construction activities might be continued the following fall. Interest is vitally stimulated because the child is afforded opportunities to be active — in the more elaborate exercises he indulges in highly diversified activities; because, dealing with concrete materials, he has a definite, measurable, and comprehensible objective in view; and because he is able to check up his errors and to gauge his skill, ability, and progress, in a way that he cannot do when applying himself to purely formal, bookish, intellectual, or unrelated exercises. He knows

what he wants to do, and the thing he wants to do ordinarily interests him. He knows what means he must employ to reach his goal. If he is lacking in the necessary skills and makes mistakes, "the thing won't work." He sees visible evidence of the breakdown of his adjustments, and this will stir him to try to master the necessary elements of control.

(b) When taught in correlation the child's knowledge begins to take on a meaning. "To know anything is to know it in its relations." No fact can be understood except as it is related to other facts, particularly to its uses. Presented in their unity, and in their various relationships, number work, reading, spelling, writing, and drawing will acquire manifold vital meanings. The child will learn that, instead of being useless abstractions, they are useful tools which will give him a practical command over his environment. Moreover, the correlation method affords the child an opportunity to apply his knowledge while he is acquiring it. He is receiving training in the selection of the controls, facts, and skills which will be required to solve similar problems in future. When the problems closely resemble the work he will do after leaving school, he is receiving direct practical training for life.

(c) The correlation method affords abundant opportunities for vitalized practice, because the same processes will be repeated in different phases of the activity.

Practical suggestions. Two suggestions of practical moment in the employment of this method should receive attention:

Employ activities which interest the child. The first is to select "centers of interest," projects or problems which will appeal to the child, arouse his attention, and secure his willing coöperation. The child is interested in activities which appeal to his needs at the time — which fit his stage of development — and which prepare him for the next step, and lead up to and anticipate his future needs. Play activities

interest him par excellence. Fortunately, many of the spontaneous plays of children are imitations of adult activities, and can be directed toward the preparation for future needs. Children are almost always interested in those activities and pursuits of adults which are within their range of comprehension, and not too far removed from their developmental needs. This is one of the elements of strength of the project. As the child grows older, he also becomes interested in coöperative work or community enterprises. Projects should be carried on as community undertakings, as was the construction of the village cited above. All the school activities should be so conducted as to socialize the child. Defective children need protracted training in team work. When they leave school they will become members of a social organism founded on the principle of the division of labor and coöperative production, and this is true whether the child goes to a colony or remains at large in the community.

Select projects requiring continuity of application. The second point is that problems or projects must be chosen which are extensive enough to cover weeks or months of time, in order that the defective may be adequately trained in the attributes in which he is frequently quite deficient; namely, sustained concentration and continuity of application. Many defectives are constantly drifting from job to job, like so much flotsam and jetsam. They do not stick to their jobs. This is, no doubt, sometimes due to the fact that they were not adequately trained in continuity of application.

Some have advocated monthly centers of interest — using a patriotic *motif* in February, centering the instruction around the life and labor of Washington and Lincoln, germination and farm life in March, harvesting in September. Thus rigidly to limit the “centers” to a calendar month

seems arbitrary and artificial. Some problems can be adequately covered in a week; others ought to cover several months.

It goes without saying that effective use can be made of the method of correlation without the necessity of abandoning all other methods. Other methods can be used independently or as supplementary aids. As already emphasized (p. 139), it is difficult to attain the same degree of proficiency in the employment of this method when the instruction is departmentalized as when the teacher has charge of the children throughout the day. The difficulty can be overcome only by complete coöperation and frequent conferences between the different teachers.

The Model Stores Equipment, secured almost gratis through Educational Foundations, 23 Flatbush Avenue, New York City, lends itself admirably for use in connection with correlation activities, and is of particular value in supplying a wealth of concrete material for the instruction in arithmetic.

10. Lesson Planning. Successful work in special classes cannot be conducted without definite preparation or lesson planning. In planning a lesson, the teacher must have clearly in mind the objective to be reached, and the methods, stages, processes, devices, tools, and materials which are to be employed and which must be placed in readiness for each lesson. She must know how the subject-matter of any particular lesson is to be connected with earlier lessons and with projected lessons, how the facts learned are going to be applied, and how the lesson is going to be put across to the pupil. An elaborate plan, containing the detailed questions, approaches, and procedures, is not usually required. An outline plan usually suffices for the trained teacher.

Planning needed in all branches. This sort of lesson plan-

ning is needed from day to day, unless the plan as constructed covers several days, or weeks, or months. In the latter case, however, there is danger that the impressions will become so vague that the plan will be of little practical service unless it is properly reviewed. Preparation or planning is needed in practically every phase of the special-class program, including the opening exercises. Opening exercises or assemblies which are planned on the "inspiration of the moment" — which is frequently the case — often tend, in our experience, to become dull, insipid, monotonous, and lacking in continuity, in "appropriateness for the occasion," and in the progressive realization of certain definite objectives which should be attained during the assembly period. But if you cannot trust to luck and inspiration in conducting the general exercises, you can do so even less in story-telling, reading, arithmetic, physical training, manual work, and emphatically not in the use of the problem-solving project, and correlation methods. The teacher who attempts to "get by" on mere inspiration, initiative, resourcefulness, and the fortuitous concurrence of events will find that her work will rapidly deteriorate and run to seed, it will be lacking in definite objective, and in orderly progress and continuity, and it will not be effectively put across to the pupil.

Is lesson planning needed in special classes? It is sometimes averred that because of the teacher's manifest superiority in intelligence, knowledge, and insight compared with the simple minds under her care, no lesson planning is required in the special classes. Obviously the teacher may "get by" without preparation so far as being discovered by the pupils is concerned. If she is personally likable, the pupils will like her whether she instructs well or poorly. But she cannot "get by" on the pragmatic test of "delivering the goods" so far as this relates to the maximal development of the child's powers and capacities through skillful teaching.

More rather than less preparation needed in special class work. Contrary to this opinion, it is probable that more lesson planning is needed in the special classes than in the regular grades, if the instruction is to be conducted on the same level of efficiency. In the regular grades the teacher has the advantage of the use of carefully worked-out texts, and of detailed syllabi, constructed for the purpose of aiding her to follow rather closely the course of study blocked out for her particular grade, and which she is expected to cover within a definitely prescribed period of time. In the special classes the program is mapped out only in general outline, and the teacher is given much freedom in planning the details of the course. But it is expected of the teacher of special classes that she will skillfully adjust and modify the training to meet the differing needs of the different pupils, not only at the time that they enter the class, but from time to time as their developing needs become apparent. Certainly this cannot be efficiently done without study, preparation, and "lesson planning." Although radical modification may not be needed in the basic elements of the instruction, nevertheless the procedures, processes, and materials must be so adjusted that they will meet the particular needs of the individual child. In spite of their mental inferiority, these children have set many problems which the experts in education and psychology have not yet fully solved. The true teacher receives her highest reward from the transformation she has wrought in her pupils, and will not shirk her responsibilities.

Everything that has been said in this section applies with particular force to the preparation and administration of the seat-work.

II. Supervision of seat-work. The "seat-work" or "busy-work" must be constantly planned and supervised by the teacher so that the child will be kept occupied with

work which is genuinely therapeutic, educative, or developmental, instead of dawdling away his time in profitless, inattentive, mechanical repetitions, or in idleness, daydreaming, or mischief-making. It would be difficult to exaggerate the amount of fruitless effort or of waste of time and energy which may occur during the unsupervised "busy-periods" in classes for the mentally deficient, owing to the dilly-dallying, loafing, or indolent proclivities of defectives, and the way in which they spend their time listlessly repeating the same exercises day after day, or mechanically "toying" with the same familiar exercises — matching colors, threading beads, arranging splints in patterns — which they can do perfectly well, which set no problem, excite no interest, and develop no new skills or knowledge. It may be contended that even such unmotivated repetitions possess some virtue in keeping a child out of mischief. But most aimless, mechanical exercises possess little educative value, and often lay the foundation for the development of habits of careless, indifferent, non-productive work, or whiling away time. Children rapidly tire of mechanical repetitions of familiar processes, and therefore spend their time in soldiering, daydreaming, aimlessly watching the other pupils, or getting into mischief.

Requirements of profitable seat-work. In order to be educationally profitable, the seat-work must set tasks for the pupils to solve which are genuine problems, which challenge thought, engage attention, and require sustained concentration, and which are properly correlated with the recitation work, so that the seat-work will prepare for the recitation, and also furnish opportunities for the application of the facts learned in the recitation.

Difficulty of supervising busy-work. The efficient administration of the seat-work constitutes one of the teacher's most important duties, as well as one of her most difficult

tasks. It involves a twofold problem: that of preventing the pupils from idling away their own time and the time of other pupils, and that of directing their efforts into channels which will prove genuinely educative. There is no cure-all that will remedy this difficulty. The main solution lies in the constant supervision of the busy-work by the teacher. However, the older and higher-grade pupils, if properly directed, can render much aid in directing the activities of the lower-grade pupils. The teacher who is conscientiously striving to make the busy-periods a real force in the betterment of the pupils is worthy of highest commendation.

12. Encouragement. Praise and encouragement are very effective incentives to use with subnormal children. Praise stimulates particularly the feeble-minded to put forth their best efforts. Small rewards are often as effective with these children as large or intrinsically precious rewards among the normals. A mere word of commendation, an encouraging glance, an approving tap on the shoulder, will incite redoubled effort in many defectives. This may be largely due to their self-love or egotism, for many are uncommonly egotistical and conceited. One of the drawbacks in the use of praise is the danger that it may unduly stimulate these propensities, although many who admit this fact consider the danger to be very slight. Properly used, praise must be regarded as a legitimate instrument for energizing the educational efforts of subnormal children. Reference will again be made to the use of this incentive as an aid in discipline.

13. Use of promotion cards. Although the practice of issuing "promotion" or "report" cards for special-class pupils does not meet with universal approbation, such reports, properly made, will serve a useful purpose in stimulating the pupils and encouraging and satisfying the parents. We suggest that reports be issued at the end of the school year showing the quality of the work done by the pupils in

the various branches, and the amount of progress made during the course of the year, the attitudes which they have shown toward their school work, the habits and attitudes which they possess which are of social significance (courtesy, punctuality, promptness, diligence, industry, thriftfulness, self-reliance, dependability, self-control, respect for others, coöperativeness, honesty, and the like), and their emotional, temperamental, and character traits. Printed forms can be expeditiously filled in by means of a system of symbols and check-marks. If a very limited report is preferred, it should show, at the very minimum, the amount of improvement which the child has made during the course of the year, for this is the matter which most deeply concerns most parents. Owing to the very slow progress made by the mentally defective and by many subnormals, it is necessary to use smaller promotion steps than the whole-year or whole-grade steps. Otherwise the annual report cards will seem to show that the child has made no advance whatever, for many who are doing first-grade work at the beginning of the school year will still be doing first-grade work at the end of the year, although they have made some progress. They may have made ten weeks of progress during the forty weeks, but the promotion card, if constructed on the basis of whole-year or half-year steps, will conceal this fact, so that the conclusion may follow that the children have been standing still educationally. We therefore suggest for use in the special classes for subnormals the quarterly system of steps in vogue in the St. Louis schools, marking the children in first grade as I-1, I-2, I-3, or I-4, according as they are doing first quarter, second quarter, third quarter, or fourth quarter work. This will make it possible correctly to record the progress of children who have only advanced one quarter, and there will be many of these children in the specials. The inevitable tendency where the half-year or whole-year steps

are used is to give exaggerated progress ratings, with the result that the child will eventually have to be graded down, which will excite keen disappointment in the parents, who will consider that their children not only have not improved but have actually deteriorated — an unjustifiable inference, for the vast majority of mental inferiors improve slowly up to their limit.

The vital necessity of translating theory into practice. Finally a word of exhortation: the mere intellectual recognition of the above teaching principles, which we regard as vital conditions of successful special-class work, will avail nothing unless the teacher, imbued by the ambition of teaching up to the highest ideals and standards of the profession, sets about resolutely to put them into practice. Unless the teacher periodically calls to mind the principles governing an effective teaching technique, she will forget some of them and begin to drift. It is easy to “teach down,” but it requires constant wakefulness and resolution to “teach up” to a high standard of craftsmanship. The teacher-in-training should begin by applying the best standards of teaching craftsmanship during her period of practice teaching.

There are two further conditions on which the success of special-class teaching is vitally dependent, namely, the suitability of the curriculum and the efficiency of the teacher, which we shall discuss at some length in the next chapter.

CHAPTER IX

THE CURRICULUM AND THE TEACHER OF THE CLASS FOR THE MENTALLY DEFICIENT

I. THE SPECIAL-CLASS CURRICULUM

To outline in detail the special-class curriculum would require a text on the pedagogy of the subnormal. This book is not intended to be a technical treatise of that character. Within its fixed limits it is possible merely to offer a few suggestions on seven fundamental divisions of the curriculum.

1. Direct health work and physical training

A generous amount of time should be devoted to hygienic and physical training, including the teaching of facts regarding the care of the body and the preservation of health, the development of proper health habits, the prevention of accidents and injuries, and the supplying of adequate physical training. The purpose of the physical training is to incite responses or movements in the children subject to diminished motility or muscular asthenia, to inhibit or suppress excessive, spasmodic or useless movements (automatisms) in those subject to excessive motility or hyperkinesis, to overcome specific muscular deformities, contractures, or weaknesses, to develop voluntary muscular control, to increase strength (or the bulk of the muscles), skill (coördination of the muscles), endurance (affecting particularly respiration, circulation and excretion), grace and harmony of movement, physical and mental health, and to develop mental alertness, concentration, courage, confidence, judgment, and the spirit of fair play and sportsmanship. The exercises should in-

clude, in addition to some of the ordinary gymnastic apparatus work:

(1) Corrective gymnastics, medico-mechanical gymnastics, physiotherapy, mechanotherapy, vibration, massage or passive movements (for improving local nutrition and circulation), and orthopedic treatment. These exercises are designed to correct or reduce postural defects, orthopedic defects or physical deformities, such as shoulder or spinal deformities, paralytic conditions, contractures of the ligaments or muscles, or flat-footedness. The value of specific corrective training of this type has been amply demonstrated in the schools for the crippled, in the medico-mechanical institutes and in the rehabilitation hospitals and camps for the soldiers maimed in the late war. Very little use, however, has been made of specific corrective training in the classes for the mentally inferior — far less than the situation justifies — although many games, gymnastic exercises, and various forms of handwork are of great value in overcoming specific physical defects and in improving coördination.

Special effort should be made to evoke responses in the torpid pupils, to improve the posture and to overcome the shambling, shuffling, dragging gait characteristic of so many, to strengthen their power of grasp and to improve the coördination of the finger and hand movements.

It may be necessary to “bombard” the child (for example, by throwing bean bags at him) to attract his attention and awaken his sensibility in order to incite warding off, catching, holding, and throwing movements. Attractive stimuli (for example, bright objects), music, and playful competition will aid in calling forth movements. A pendulum game in which the children, standing in a circle, try to strike a large rubber ball attached to a cord, will arouse prehensive and striking movements.

Exercises of value for improving the gait are contests of

walking on tiptoe, running to command up or down hill, walking over uneven places or irregularly placed marks on the ground, walking on the balancing board, on a chalk line, on bricks placed at regular intervals, stepping over bean bags or between the rounds of a ladder placed horizontally on the floor, and leaping from a spring board which develops elasticity in the sagging legs. The ladder is one of the most useful appliances for correcting defects. In addition to its use, as above indicated, it can be placed obliquely against the wall to permit of exercises for strengthening the arm muscles and for overcoming round shoulders or spinal curvature. Standing beneath the ladder, the child should be required to pull himself up to the top by passing the hands alternately from round to round. With his back against a narrow smooth board placed on top of the rounds, he should be required to pull himself to the top of the ladder and then let himself down, by passing the hands alternately from round to round. By placing the ladder in the horizontal position at various elevations from the floor (to suit children of different heights) the child may swing by the hands from round to round. Poise may be improved and the tendency to stoop corrected by carrying objects balanced on the head, such as a book or basket. The strength of grasp and finger coördination may be improved by the exercises already given, such as hanging, climbing, catching, throwing, and by club swinging, throwing at a target, ring toss, playing jack straws and fish pond, block building, peg-board pattern construction, weaving, and by a host of industrial arts activities.

(2) Sports, athletics, plays, and games, including games for sensori-motor and mental training, and physical contests. For all-round physical training, sports and games are undoubtedly the most valuable. They arouse more interest and effort, have far greater socializing value, and usually provide more vigorous exercise for a larger number

of muscle groups. The normal child plays spontaneously. He is inquisitive — a genuine Paul Pry, a born experimenter, who is eager to find out for himself — he has a superabundance of energy and delights in exercising his powers. Left alone he will largely educate himself by spontaneous play. But the mentally deficient child, especially the lower grade child, is not much inclined to play, particularly to partake in organized games. He must be urged and taught to play. The teacher should take special pains to stimulate, direct, and organize the play activities of mental defectives.

(3) Calisthenics and rhythm work, including folk dancing and eurhythmics (Dalcroze) accompanied by music. Music and rhythm make a very strong appeal to the mentally deficient and ought to be utilized in the physical training exercises whenever possible. This type of work is of great service in overcoming the awkward, clumsy, ungainly movements so characteristic of many defectives. Eurhythmics is a system of musical training accompanied by bodily movements, designed to develop coördination of the mind and body, physical grace and self-control, to improve the carriage, relax muscular tenseness, and develop hearing and musical appreciation. It is alleged that it is also of value in quickening the mentally deficient mentally. It should find a larger place in the special schools than is now the case.

(4) Military drills, tactics, or other exercises intended to evoke quick and accurate responses and prompt obedience to commands, often of value in arousing defectives out of their lethargy and in preparing the way for more purely intellectual training.

(5) Periodical setting-up exercises are of some value as a counter irritant to the tendency of the mentally deficient to assume a slouchy attitude in their seats.

(6) Development of habits of personal cleanliness. It is

not sufficient to tell these children that they must come to school with clean hands and faces, hair combed, their clothing properly arranged and brushed, but they must be shown how to wash themselves clean and required to do so until they have formed the habit. The special schools ought to be provided with bath tubs and showers, especially the latter. The practice of beginning the school day with tooth brush drills should be widely extended. A very serviceable brush can be purchased at a nominal price from Takamine Manufacturing Corporation, New York City. The tooth brushes, with the children's numbers or names placed on the handles, should be suspended at appropriate distances, preferably in a container enclosed with wire netting.

(7) Rest periods for relaxation and repose are of value for children with weak physical constitutions and powers of endurance. Some hold that all the defectives should be given a lunch daily, followed by a nap on a couch preferably in an open-air room. Our experience has been that where a noon intermission is provided, as is almost invariably the case, this is necessary only for a very small proportion of defectives. Many mental defectives are more or less habitually weary or bored, but not genuinely fatigued. They do not exert themselves sufficiently to become fatigued. Of course, a nap in the early afternoon would be beneficial for all young children.

As much of the physical training as possible should be given out doors when the weather permits.

E. G. Payne has constructed a scale for the measurement of habits and practices in health and accident prevention in which the pupil is assigned a certain score on various items relating to food, air, drink, exercise, sleep, posture, cleanliness, clothing, weight, height, and safety, and which makes possible a more accurate selection of the pupils with bad health habits, and more intelligent supervision of their health

practices and organization of remedial measures. There now exist many clubs, organizations, and leagues in all sections of the country which will gladly supply tracts, pamphlets, and information regarding the care of children's health.

2. *Moral training*

The mentally deficient are in greater need of definite moral training than normal children. Fortunately most of them respond very favorably to such training. Two methods of training are available.

(a) **Didactic instruction.** This consists in furnishing enlightenment concerning moral relations and obligations, virtue and vice, the difference between right and wrong, particular actions which must be avoided, and particular responses which should be acquired. Defectives need to be exhorted to do the right things and to avoid the wrong. They need enlightenment on the practical everyday virtues: on the duty of industry, honesty, truth-telling, sincerity, faithfulness, loyalty, dependability, fairness, courage to act justly and to resist the tendency to filch, deceive, skulk, and shirk; on the importance of honor and purity in all their personal relations, including instruction in sex hygiene and sex ethics. These children need especially to have their morals safeguarded, particularly the girls. One of the most sacred duties of the teacher, which is not infrequently slighted, is to warn the girls and the girls' parents of the dangers lurking in their way, and to keep an observant eye on those who are over-sexed or viciously inclined.

This didactic instruction and advice should, however, be made as concrete and practical as possible. Liberal use should be made of anecdotes, stories, easily apprehended parables and fables, and illustrations of concrete or specific occurrences from the school and community. Examples are

better than precepts; and precepts are better than abstract principles, formulas or ideals.

(b) **Habit formation.** But better than any of these methods is daily training in correct modes of behavior, in actually practicing or doing desirable deeds, and in forming fixed habits of response. Practicing is better than preaching. It is deeds, not professions or resolutions that count. Ethical enlightenment which does not eventuate in moral conduct is valueless. What the child thinks in private is of little social consequence, but his action becomes a matter of concern for every one. Some one has said that practical morality even in the case of the mass of people in the general population is ninety per cent instinct, habit, and custom. The vast majority of persons do the habitual and customary things — the things which are rooted in impulse and instinct, the things which have become routine habits, and the things which are sanctioned by the customs and conventions obtaining in their social milieu. They do not ordinarily act as the result of the careful weighing of motives and the deliberate consideration of the abstract ethical principles involved in any course of conduct. If this is true of people in general, as I believe it is, it is doubly true of defectives. Our main reliance in developing acceptable behavior in mental defectives must be not on didactic instruction, on promises, good intentions, resolutions, or even on "good-will," but on habit formation, on expression rather than impression. Good conduct must be made a matter of habituation. The aim must be to build up dependable habits of response by training the children day by day to actually do the right and the polite thing: to be punctual, give prompt obedience, talk distinctly, assist the weaker children, clean their shoes, tell the truth, etc. Too much stress cannot be laid on the importance of developing habits of promptness, industry, continued application, and regularity. Many deficient children

lose their jobs because they come late, or because they are lacking in perseverance, and remain away when fancy strikes them. We must utilize all the psychological aids possible for doing this, particularly the basic principles of habit formation as formulated by James: initial focalization of consciousness, in order that the child may secure a clear, definite, and specific idea of the habit to be formed; attentive repetition, so that the habits may be correctly and expeditiously formed, and avoidance of exceptions during the continuance of the practice until a stage of automatic control has been attained or approximated.

Suggested aids in the discipline and moral training of defectives. The following suggestions will, it is believed, prove of value to the teacher in her attempt to develop the character and improve the discipline and deportment of subnormals:

(a) The bestowal of commendation for the good the child does will focus his attention on desirable conduct, whereas reproof for evil deeds will direct attention to the proscriptions and the undesirable forms of behavior. According to the doctrine of "dynamogeny," ideas are ideomotor — that is, they tend to work themselves out into appropriate expression. Hence we should rivet the child's attention on desirable deeds, the things we want him to do. Praise is very effective in doing this. It is one of the major motivating forces. Most people do better under the stimulus of encouragement. Pleasant stimuli energize and liberate; unpleasant experiences tend to depress and devitalize.

(b) The bestowal of intrinsic or extrinsic rewards or prizes or special privileges for good conduct and the deprivation of privileges and the withholding of rewards for infractions of rules are, for similar reasons, very effective with subnormals. Little children and children with little minds need immediate and tangible rewards. Give the child some recognition,

such as a mark, a red, blue, or gold star, a ribbon, a badge, a souvenir, an emblem, a tag, or a special privilege, or make him a "trusty" in recognition of good conduct. On the other hand, for misconduct deprive him of certain privileges, objects, or advantages which he greatly covets. In the institutions the withholding of delicious foods (pie or ice cream) for bad conduct serves as a powerful corrective. The Vineland Training School has for over fifteen years been using a system of "OK" credit slips, which has proved very effective with feeble-minded children. Each child is given his OK credit at the end of every period from every department to which he has been scheduled. In other words, he is given immediate recognition for good work done during every period or session. In case he has not earned his credit a hole is punched in the OK. At the end of the week the child goes to the institution store where he is given credit according to the number of OK's or punched holes which he has received. He may make purchases in the store with credits, or deposit the credits for future purchases. Tickets bearing the inscription "good conduct pupil," or some more appropriate designation, might be issued daily to the well-behaved pupils. The names of the pupils might be placed on the blackboard together with a star or mark for every five or ten tickets issued.

(c) Suggestions should be used rather than commands, friendly guidance rather than coercion. Many children who will rebel at commands will respond willingly to suggestions, especially when conveyed in a pleasant, appealing voice. A categorical mandate tends to arouse animosity, resentment, opposition, and a desire to violate the injunction. Make the thing appear as a special privilege, and not an order. Moreover, a positive suggestion is more effective than a negative one, because of the dynamogenic tendency of ideas, as already explained. Concentration on a forbid-

den evil or wicked act will make it stand out more prominently in consciousness, and when the child is angry with you he will do the things you have emphasized as very bad. Make your suggestions convey the idea of what the child should do, rather than what he should not do. Fix in his mind the ideas of what things are good, desirable, and right.

(d) The teacher will gain more by evidencing regret or sorrow, than by evidencing irritability and anger over the child's misdeed. Anger arouses anger, while regret and commiseration tend to arouse penitence and remorse.

(e) Provide substitute activities for the child's undesirable activities, substitute controlled movements for the uncontrolled, or active occupations for aimless, random manipulations, and divert instinctive tendencies into fruitful channels. If the child has a passion for whittling his desk, substitute profitable forms of manual training for the aimless, destructive movements. If the child suffers from constant restlessness because of superabundant energy or nervous instability, substitute active occupations. If his acquisitive instinct leads him to misappropriate, let him collect, mount or preserve certain objects designated by the teacher. By carefully noting the children's tendencies the teacher will be able to forestall outbreaks of restlessness by diverting the nervous explosiveness into fruitful channels of endeavor. If the teacher will take special pains to adapt the instruction to the needs of the pupils and teach effectively, "disciplinary bugbears" will probably be unknown in her class, as shown on pages 177-181.

(f) By transforming the class into a bright, cheery, happy home, the atmosphere of cheer and confidence will largely take care of the problem of discipline. Do not set out to "have discipline at any cost," but to create such an atmosphere in your classroom that good discipline will follow inevitably.

(g) It is evident from what has been said that there will be

little use for corporal punishment in the special schools. But I do not disapprove of its use as a last resort. It is far preferable to a sarcastic tongue, which rankles and sears the soul, and is often more effective than scolding or reproof. Bad habits are sometimes speedily broken and good ones effectively formed by a shock. Pain has been the great inhibitor, as pleasure has been the great stimulator, throughout the biological creation. Always appeal to the highest rational motives in molding children's character — the supreme job of the teacher — to motives of right, duty, justice, honor, charity, and love — but use lower-level motives when the higher motives are ineffective. So train children that they will willingly act aright from rational considerations if possible. But if impossible, enforce good conduct by recourse to mechanisms of control of a more primitive type.

3. Literary or academic studies

Value of literary instruction. It is often insisted that teaching even the basic academic branches, such as reading, numbers, spelling, writing, or composition, to mental defectives is a waste of time, because they do not acquire sufficient competency in any of the schoolroom arts to make any practical use of them.

Competency of high-grade imbeciles in reading and numbers. In the survey of the St. Louis special classes by standardized educational tests we found that the teaching of reading and arithmetic to imbeciles or mental defectives who did not reach a mentality of about six years did not result in the acquisition of any useful form of skill. The highest grades of the imbeciles barely exceeded the zero point in the curve of competency in reading and numbers after six or seven years of school attendance.

The potential capacity of imbeciles for acquiring a mas-

tery of the rudiments of the literary instruction may be concretely illustrated by very brief citations from three case records. We shall begin with the least competent child.

D. H., an exceedingly erratic, restless, and flighty Jewish boy, had a Binet-Simon age of 4.2 by the 1911 at the age of 9.58, giving an I.Q. of 44, a psychomotor age of 4.5 according to the Seguin form-board (writer's norms), and a Stanford-Binet age of 4.3 at the age of 13, I.Q. 33, and a psychomotor level of six years. He entered the grade school at the age of six and a half, and the special a year later, from which he was excluded twice before being finally eliminated in his thirteenth year. At the age of 12.4, when he had been in school about four years, the special report from the school indicated that he was fair in kindergarten work but flighty, that he had very little capacity in sawing and nailing, that he would not apply himself to garden activities, that he was fair in spool knitting, crude in drawing for self-expression, had little power for writing, was able to get a few ideas in story telling and able to repeat them, had no conception of number or size, had learned to recognize on the board the words *I, can, see, run, hop, jump, ball, roll, the, is, play, blue, red, and, my, little, boy, am, girl, baby, pretty, like, fly, kitty*, and was able to read two pages of print from a primer. He was observant but unstable and could not concentrate. His greatest improvement was in conduct. When examined by the writer at the age of 13, he was restless and inattentive. He repeated 9 2 as 1 9 2, 2 5 as 1 2 5, but later repeated two digits correctly. He failed to count 13 pennies correctly although he had done so more than three years before. A hen and cow had two legs each, a horse two, but this was later changed to three, a dog three, a girl three, and a boy four at first and then three. But he had two legs. "I can run" was read from a printed page as "I see . . . can"; "I can hop" as "I see . . . k . . ."; and "I am a boy" as "k, c, b, e, know I, c." When asked to spell cat he said "and cat," but after I had spelled it, he said "c n r cat." Rat was spelled as "c n coupled cat," but after I had spelled it for him, as "n cat." (He had had little formal instruction in spelling.) "One apple and one more apple" made three apples. "Two pennies and two more pennies" made two, and then three pennies. When the pennies were placed thus 0 0 0 0 on the table he finally counted them correctly. When five pennies were placed thus 0 0 0 0 0 he said there were two. When

asked to count them he pushed the pennies aside singly and gave the correct number. The sentence "*See little Paul*" in script was copied thus:

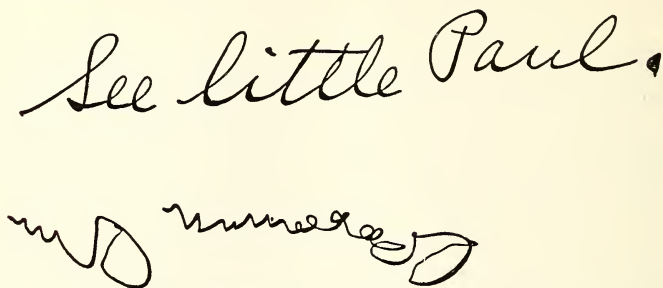


FIG. 7. SPECIMEN OF WRITING FROM COPY BY D. H.

The school report at the end of the school year, when he was almost thirteen and a half, showed that he took no interest in tag, ball, or running games, he was poor in floor, ladder, and suspension work, he showed no judgment in calisthenic work, he had made slight improvement in running, tactic, and apparatus work, he would not touch clay unless forced to do so, he had learned to pick up the stitch in cross stitching, he showed more interest and had improved slightly in handwork, he had not learned to write, he could count to five and write figures to four. The educational results with unstable imbeciles of this grade are, as seen, very meager.

O. R., an exceedingly placid and stable boy but lacking in vital force and having a very indistinct articulation, was admitted into a special class at the age of 7.3, at which time he had a Binet-Simon age of 3.4, I.Q. 46, by the 1911 scale. He was excluded within three months as ineducable, but readmitted somewhat over a year later in deference to the parents' entreaties; and was still continuing in the special at the time of my leaving, having made perceptible progress in manual work but only slight progress in the literary studies. At the age of 10.7 years he was able to read a few familiar words and short phrases by sight, and could copy words and sentences, but his penmanship was poor, as may be seen from the following sample of writing which he copied laboriously from the board:

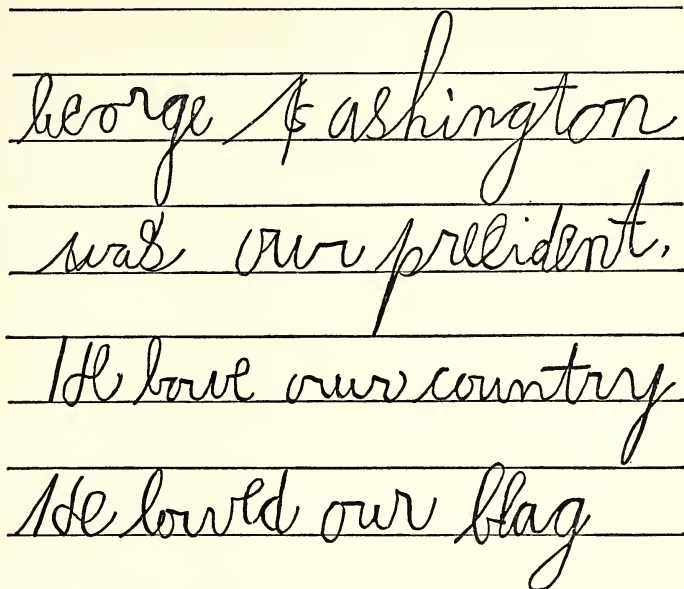


FIG. 8. SPECIMEN OF WRITING FROM COPY BY O. R.

L. D., jovial, talkative, usually well-behaved, but unstable, erratic, and sometimes obstreperous, entered school in his sixth year, and was excluded when 16.5 for an alleged attempt to tamper with a young girl. He had a mental level of 6.4 according to the 1911 Binet-Simon at the age of 12.8, giving an I.Q. of 50, and a psychomotor age of 4.5 (Seguin), and a level of seven years according to the Stanford-Binet at the age of 16.2, giving an I.Q. of 43, and a similar psychomotor age. At the age of 15.5 the school report indicated that he had no ability in woodwork, raffia, or gardening; he showed no judgment in gardening, "just as soon pulling plants as weeds"; he was very crude in writing and drawing; was fair in knitting wash cloths, had improved a little in reading, doing about I-3 in reading and spelling; he was very much interested in oral language work and dramatization, having improved considerably in this work, but was flighty in expression; he had learned to count beyond one hundred, could recognize and write numbers and solve very simple problems, and he had learned to march in step.

At the age of sixteen he scored 1 per cent in a written test of Starch's second spelling test, and six per cent in an oral test of the same words, which is below the first-grade standard. In Ayres test A he scored 100 per cent, in B 75 per cent, in C 100 per cent, in D 44 per cent, and in E 29 per cent, which is below the second-grade standard. Two months later he read correctly from an unfamiliar text, "I have an apple" and "I see the sun," although he had great difficulty in recognizing the last word. He read all except "arrow" in "It is a bow and arrow." He wrote correctly from dictation, "See the baby," which happened to be old material. In "Can you row the boat?" he left out *row* and for *boat* wrote "uown." In "The dog fights the cat," he left out *fights the* and inserted "ma." When asked to "write a story" he wrote: "I see a little baby." Urged to "go on," he wrote: "I see a pritty is baby?" When again urged to go on, he wrote: "I see Like and baby?" Effort to induce him to relate what he had written failed. In oral arithmetic he gave the following answers, many equivalent expressions being used to indicate the correct process (for example, "two and two are how many?" "two and two more," "two plus two," "add two to two.")

$2 + 2 = 4$	$12 - 7 = 9$	$4 \times 3 = 7$	$6 \div 2 = 8$
$5 + 6 = 11$	$19 - 4 = 16$	$5 \times 4 = 9$	$10 \div 2 = 12$
$8 + 7 = 15$	$20\text{¢} - 6\text{¢} = 10\text{¢}$	$2 \times 2 = 4$	$8 \div 2 = 10$
$17 + 5 = 24$		$3 \times 3 = 6$	
$15 + 4 = 19$		$3 \times 2 = 5$	
$31 + 12 = 45$		$1 \times 1 = 0$	
		$6 \times 2 = 4$	

5¢ gum + 10¢ candy + 3¢ licorice = 12¢ , then 15¢ , and then 18¢ .
 5¢ apples + 3¢ rice + 4¢ gum = 10¢ , then 14¢ . $10\text{¢} - 3\text{¢} = 8\text{¢}$.
 "If I have six apples in a pile here and divide them into two equal piles, how many apples will there be in each pile?" Ans. 30. "If I have 10 apples in a pile, and divide the pile into two equal piles, so that half of the apples will be in one pile and half in the other pile, how many apples will there be in each pile?" Ans. (1) 20. (2) 12. (3) 10. Placing eight objects in a pile and repeating the question, he first replied "twelve" and then "eighteen." I then asked L. to divide the pile into two equal piles. This he did correctly, but said he had five in each pile, even after he had examined the piles carefully. He solved correctly the problems, "If I give you 5¢ to-day and three times as much to-morrow, how much will

you get to-morrow?" and "If I give you 6 apples to-day and two times as many to-morrow, how many will you get to-morrow?" but the similar problems 7 apples $\times$ 3 apples, 7 apples $\times$ 2 apples, and 4 apples $\times$ 2 apples evoked the answers 10, 15, and 9 apples, respectively.

Here is a boy who would not rate lower than a high-grade imbecile who had barely acquired control of the most rudimentary processes of reading, writing, and figuring, and who had made very little progress in the manual arts. But it should not be forgotten that he belonged to the unstable type of defective. Stable defectives of this intelligence level usually make considerably greater progress, especially in handwork.

Mitchell's, Goddard's, and Woodrow's opinions. David Mitchell considers that no academic work at all should be taught children who grade as "middle-grade imbeciles" (in Barr's classification) or lower, while Goddard holds that the three R's "*are almost entirely out of place with children who are mentally defective*," obviously including even the highest-grade cases. H. Woodrow holds that instruction is useless in arithmetic beyond "addition, subtraction, multiplication, division, and very simple fractions" if the child's I.Q. is below 70, and useless in reading if the I.Q. is below 40.

Competency of high-grade feeble-minded in reading. It is a fact that even the highest grades of mental defectives, assuming that they have been properly classified, do not make any considerable practical use of the literary skills they have acquired. Many children of this grade master the mechanics of reading fairly well up to about the beginning of the third-grade level of competency. A few possess special ability in reading, and read more difficult matter with great fluency. Most, however, rate considerably lower on content reading than word-calling. They are unable to "husk thoughts" from the printed page if the subject-matter is at all involved. Moreover, few seem to acquire the desire or the permanent habit of reading. Martha Lindley, in investi-

gating the reading habits of children in the Vineland Training School over twelve years of age who had been taught to read, found that only 25 per cent "still read to some extent, and only 12 per cent did so voluntarily." This included 5.2 per cent of those with an eight-year mentality, and 23 per cent of those with a nine-year mentality. Sixty-eight per cent of the readers had mentalities of ten and eleven. She concluded that only those reaching the latter mentalities should receive instruction in reading, a conclusion which, based on the army results, could not be applied to extra-institutional deficients.

Competency in arithmetic. In number work practically all of the higher grades can be trained to count, and some can master the mechanics of figuring or ciphering. Our results, based on standardized tests, showed that they are most competent in addition, and least competent in fractions and division, although some learn to repeat the multiplication tables quite glibly. Many do fairly well with simple concrete problems, such as measuring, buying, and selling, provided the conditions are not changed. It has been noted that a mentally defective farm hand who has no trouble in giving the horses the right number of ears of corn may be unable to pick out an equal number of apples or potatoes. Many of those who become newsboys or fruit vendors acquire considerable knack in making change with the coins usually handed them. But few can solve problems of any degree of complexity — they do not know which process to use, or lose trail of the problem and so get the processes confused — or they are not able clearly to conceive or envisage abstract numerical relations, or acquire clear-cut abstract number concepts, so as to be able to abstract and generalize.

Competency in penmanship and composition. Many learn to write a fairly readable style of penmanship, and some can write simple sentences or phrases correctly. But

Dayton Ohio
1923

Once Ther was three
goats ho lived on
a hill and the
mother said now you
must wark of your
sefue and so they
did they did work
everyf day and
lived in a little
house, and every
day they went to
get apples.

FIG. 9

R. S., boy, age 15, time 9 minutes to write story. Four and one-half years in school (about one year in a school for the crippled and three months in a special). Doing II A in reading and arithmetic according to the teacher, but very poor in spelling. I.Q. by Stanford-Binet at age 14.1, 56.

I'm glad that I'm in
your room and I like
the work that you
give me and I like
to paint those little
flower vases and
I like the games
that we play in
fym. and I like
all the boys and
girls in the
room and I like
to help them with
their work.

FIG. 10

J. A., boy, age 16.5, time 9 minutes. In school almost eleven years (less than one year in an ungraded and special class). Rated by the teacher as doing third grade in arithmetic and fifth in reading. I.Q. at age 15.5, 53.

We are have a garden
at home it is grow
very fend.

We are have a pony
at home and a
dog to

I have a writing desk
at home a flower
garden in it now
grow fine now
we have flag in
it to.

FIG. 11

R. L., girl, age 15.6, time 13 minutes. Ten years in school (one month in a special).
Rated by the teacher as doing second-grade work in arithmetic and reading. I.Q. at age
15.1, 46.

the composition is almost invariably poor: the words are badly spelled, the sentences are often incomplete, poorly punctuated, badly constructed, ungrammatical, the capitalization is defective, and the contents are often childish and trivial. The quality of the composition may be judged from

The boy and girl where play
the garden.
Then are pick flowers in
the garden,
The boy are play ball,
Are you good in school,
What do you like to do,

FIG. 12

K. S., boy, age 14.7, time 13.5 minutes. Seven and one-half years in school (about six in a special class). Did less than second-grade work in the Gray oral reading test. I.Q. at age 13.3, 69 from the upper base and 60 from the lower base, and at the age of 14.9, 57.

the samples in Figs. 9 to 12. These mental defectives, who graded among the upper third in composition of the children in a special class, were asked to "write a little letter to your teacher or a little story as nicely as you can."

Mental defectives acquire least proficiency in composi-

tion and arithmetic of any of the literary subjects usually taught in the special classes.

Overemphasis on literary training. It is undeniably true that mentally deficient school children throughout the country are overinstructed in the literary branches. This is not only true of those who are in the regular grades — and most probably still remain in the grades — but of the majority of those who are in the special classes. The programs in many special classes are essentially patterned after the regular grade curricula, except that more elasticity is permitted and more emphasis is placed on motor forms of training. But the motor work is injected more as a supplement to the orthodox academic branches than as a major integral part of the program.

It would be possible, therefore, to improve the instruction in the special schools by devoting some of the time now given to the academic branches to more profitable forms of training.

Shall we eliminate all literary instruction? While it is true that the mentally deficient make little progress in the literary branches, yet I do not for a moment advocate the complete suppression of all literary instruction for such children. The attempt to do this would arouse too much hostility toward the special classes on the part of many parents, who insist that their children must be given literary training, and in the event that they are refused such training in the specials, that they be returned to the grades where such advantages are available. This is largely because they believe that the literary instruction possesses more value as mental discipline than the handwork and because they want the child's illiteracy eradicated if possible, since this, in their opinion, more effectively stigmatizes the child than any other defect. Moreover, the literary instruction, apart from any disciplinary value which it may have — and we cannot affirm dog-

matically that this value is nil — and apart from the enjoyment which it sometimes affords even to children who cannot attain any considerable degree of literary mastery, is not entirely devoid of intrinsic value for the mentally deficient. It does lead to the development of a few skills of practical value, and does give a slight command of certain literary tools which are basic instruments of control in civilized society and which will render the mentally deficient slightly more efficient, human, and happy. While the chief emphasis in the training of even the higher grades of mental defectives and the borderline should be placed on the development of useful forms of manual and industrial skill and proper habits of moral and social response, there is justification for devoting a reasonable amount of time to the basic literary branches, namely reading (in the first instance), spelling, writing, composition, oral language, arithmetic, local geography, and nature study.

Character of literary instruction. But this instruction must be vitalized by being orally, visually, and concretely presented, and by being profusely correlated with the child's interests and activities in and out of school. The "set" instruction must be enlivened by incidental "information talks" and "object lessons" on many subjects of practical value to defectives, who must adjust themselves to life situations either in homes or institutions. The regular literary instruction should be largely confined to the rudiments, to the elements which come within the children's range of comprehension and have the greatest practical "instrumental" utility.

Methods and aims of teaching reading. In the teaching of reading use should be made of cut-out letters, words, and phrases (for matching), elevated or depressed letters (for supplementing the visual with tactual impressions), black-board and chart work, the use of illustrated elementary

readers and story-books in abundance,¹ and loose sheet readers constructed by the pupils and teacher in the class in which the "stories" recount the children's experiences at the time in the class and in the home, the use of pictures and games, and a great variety of the recognized methods of teaching reading (the alphabetic, syllabic, word, sentence, phonic, phonogrammic, rhyming action words and sentences, dramatization, flash exposures, etc.) While the word and sentence method in connection with the use of illustrative material and motor expression (dramatization, writing words, and pronouncing phonic elements and words) will probably prove to be best for most of these pupils, other methods (even the archaic alphabetic or syllabic) will prove superior in exceptional cases. Although the aims of reading instruction are the same for the subnormal as for the normal — namely, developing the power to instantly recognize the printed symbols, to pronounce or read the words orally with fluency and expression, to extract the thought from the printed page, to secure pleasure and information from reading, and to acquire a taste for good reading — the first concern in teaching reading to mental defectives must be to develop a reading vocabulary for the common terms which may be expected to occur in their daily social and vocational contacts, including the automatic recognition of the words and the interpretation of the thought of matter within their range of reading ability and comprehension, and to train them to read and understand notices, street signs, street-car signs, figures, the months and days of the week on a calendar, the time of day, orders, bills, their signature, and the like.

Oral and written language instruction. In the language

¹ The gradation of difficulty advances too rapidly in the ordinary readers, which are made for normal children. Hence there is great need for supplementary reading material which will fit the child's level of attainment.

work the aim should be to increase the child's vocabulary; to train him to listen carefully to spoken words, so that he will perceive the sounds accurately; to develop fluent, melodious, properly modulated, correct, idiomatic, and clear expression; to correct slovenly, drawling, slurring, indistinct, inarticulate forms of pronunciation, or speech defects; to habituate the child in the use of polite and courteous forms of conversational speech; to train him to write a legible hand, social and business letters, orders, bills, and checks; to properly spell, capitalize, and punctuate his written work; and to enlarge his thoughts. The language lessons should be based on all of the child's interests and activities, in and out of school, including the observations made on the industrial trips. In addition to incidental instruction in spelling given in connection with the reading and language work, two or three words may be assigned per day for special study or drill by the method described in the writer's *Spelling Efficiency*, which has proved effective in practice. L. P. Ayres's list of one thousand frequently used words will supply an excellent nucleus of words for the spelling instruction.

Arithmetic instruction. The number work should be thoroughly humanized and made an agent of utility in the classroom. It should be buttressed on the child's concrete activities in the schoolroom and correlated with all the activities in which number and magnitude are involved. It should emerge from the kindergarten and sensori-motor activities, plays, and games which will afford abundant opportunities for counting, adding to and taking away, noting differences in size, shape, and arrangement or serial order. The child should be trained to count, read figures, including small fractions, read and understand the ordinary mathematical signs and abbreviations, and acquire some dexterity in the use of the fundamental processes. He should learn how to record numerical data, and to make out an account. He should be

required to apply the various mathematical processes to the solution of the problems which confront him daily in the school. Problems should be selected which are similar to those he will meet after leaving school. The exercises should include buying and selling in the school store, measuring, reading, and recording the results of measuring with the bushel, quart, pint, gallon, foot rule, yard stick, tape line, and scales. He should also be trained to judge or estimate distances and magnitudes.

4. Sensori-motor, manual, industrial arts, pre-vocational and vocational training

Meaning of sense culture. It is not a process of perfecting or refining the sense organs, although it may render the nervous pathways more permeable and thus improve conductivity or transmissibility. Its chief value is mental. It develops what may be called the child's "sensory consciousness." Sense training, if properly conducted, should increase the speed, accuracy, and range of observation. It should enable the child to discriminate better between stimuli, to notice smaller differences, to acquire facts about stimuli, to compare the facts, to form accurate concepts, and to draw correct inferences and conclusions from the facts compared, to classify facts, arrange them in orderly sequence, and apply correct names to the facts observed. One of the most important objectives of sense training is to develop the habit of systematic and methodical observation.

Need of sensori-motor training. The normal child may secure all the sensori-motor training which he requires from his plays, games, playful occupations, and inveterate experimenting. The low-grade mental defective, the young mentally deficient child, and the child with special sensory or motor defects must have such experience or training thrust upon him.

Types of training to be given. A considerable amount of sensori-motor training can be given incidentally in connection with the games and plays, the exercises of practical life, the shop work, the manual training, in fact in connection with the training in all the arts and crafts. But young or low grade defectives should be given a certain amount of formal "sense training," particularly so far as relates to the visual, auditory and kinesthetic senses, formal motor training, and kindergarten gifts and occupations, including exercises in noting resemblances, differences, and contrasts, noting smaller and smaller differences, matching forms and colors, constructing patterns with colored beads, colored splints, colored pegs (using the peg boards) and block building, and the like. The Montessori sense training apparatus can be advantageously used as a supplement.

Practical suggestions. Choose materials which will interest the child, which are used in play activities and adult occupations, which afford sharp contrasts, which can be easily handled and manipulated, which are durable, sanitary, and easily cleaned, and which can be arranged in graded and progressive series. It is important to emphasize that the training of the sensory and motor functions should go hand in hand. Sense training and muscle training should not be divorced. The child should not sit passively staring at objects, or passively listening. He should be permitted to touch things, and manipulate objects in a constructive way. Observation and response have gone together all through the history of the race. The unit of nervous action is the sensori-motor arc. Manipulating objects enriches knowledge and creates problematic situations to motivate the child's activities. Finally much repetition will be needed with defectives, for which reason it is necessary to arrange the exercises in progressive steps in order to avoid the waste which comes from repeating identical exercises, and to

appeal to the element of rivalry or contest by introducing group exercises.

Industrial arts training. The shop and industrial arts training should include the following activities, according to the equipment available and the requirements of each child, based on his level of development, special capacities or talents, predilections, and vocational interests:

Paper work: including cutting, folding, cutting out pictures, mounting, coloring, poster or panel work, constructing various articles, modeling in pasteboard, making crêpe paper flowers, table and room decorations, and costumes.

Plastic art: work in clay, plasticine, wax, sealing wax, cement, culminating in concrete work of various kinds, colored in petroma (which does not require firing), pottery, and faïence.

Weaving: raffia, reed, cane, and paper rope weaving, including the weaving of mats, trays, baskets of various kinds, including Indian baskets,¹ vases, lamp shades, floor lamps, and ferneries; and chair caning.

Loom and cord work: hand loom and foot loom weaving, cardboard loom weaving, spool knitting, rake knitting, rug making (braided and crocheted), braiding, netting, knotting, cord work, macramé, hammock making.

Sewing, hand and machine: making various kinds of stitches; sewing on buttons, hooks and eyes, cutting, tailoring; making counterpanes, sewing bags, kitchen aprons, outing flannel petticoats, caps, middy blouses, bloomers, dresses, undergarments, and mending and renovating garments.

Knitting, darning, crocheting, embroidering, lace-making, and millinery.

Woodwork: making simple objects, scroll-saw work, toy-

¹ Willow baskets have considerable utilitarian value, but are difficult to make.

making, carpentry, furniture making and repairing, including upholstering; making tables, boxes, benches, stands, tabourets, wooden waste baskets, knife boxes, broom holders, brush backs, book or magazine racks, bird houses, in a profusion of styles, hat racks, costumers, bookcases, medicine cabinets, frames for reed furniture and table and floor lamps, rattan furniture, and steamer chairs.

Brush making: nail, shoe, scrub, cloth, and duster brushes.

Metal work: bent-iron work, repoussé work, beaten copper work; tin can constructions.

Free-hand drawing and sketching: coloring, filling in outlines in appropriate colors, stencil design work, including the making of stencils in stencil paper.

Leatherwork: cobbling, flat modeling and embossing, cut work, and making objects.

Practical training for home service: this should be based on the performance of service in the special schools, including the cleaning of floors, windows, gas ranges, cabinets, closets, ice boxes, and furniture; sweeping, wiping, dusting, washing, and wiping and taking care of dishes and kitchen utensils; laundering; the proper preparation and serving of meals and lunches; instruction in regard to balanced meals and food requirements; the growing of vegetables in the school garden; canning vegetables; the outfitting of a large doll, in connection with instruction on the care of the baby.

Training for specific jobs or trades will not be amiss in the industrial centers if the facilities are supplied.

In Detroit the older, high-grade boys are transferred to special centers where they are taught auto-repairing, bench work, wood turning, lathe work, rough carpentry, drafting, reading blue-prints, and household mechanics (for example, removing sashes, hanging doors and shades, repairing locks, utensils, and furniture, renewing dead cells, inserting exten-

sion cords, wiring, reading meters, adjusting faucets). The older girls get simple commercial sewing, laundry work, cooking, and training in the regular school cafeterias.

Reasons for emphasizing motor training. As already suggested, the major emphasis in the curriculum for defectives must be placed on the motor forms of training rather than on the literary forms of training for various reasons.

(1) The child is fundamentally a motor being. He is motor a long time before he becomes intellectual. Movement rests on an instinctive, impulsive basis — it is an irresistible impulse — while cogitation is an artifact thrust on the child by the exigencies of civilization. Movement satisfies a fundamental biological need.

(2) It is through movements that the child acquires a knowledge of the world. Movements bring him into intimate contact with his surroundings. Movements of the hands (and in early life of the lips also) enable him to explore objects. It is from these kinesthetic sensations that the child gets his vital, pulsating, trustworthy knowledge of reality. He does not actually know what a ball is until he has handled one and obtained a host of new sensations: hardness, smoothness, resilience, elasticity, ability to roll and rebound, coldness, heaviness, etc. When there is conflict between the different senses, the appeal is always made to the kinesthetic sensations: that which is capable of offering resistance to muscular exertion must be real.

(3) Motor education affords excellent mental training. It offers opportunities to compare, judge, analyze problems, solve new problems, adapt means to ends, and coördinate movements toward the attainment of desired objectives. Just as motor education consists most largely in the development and refinement of muscular coördinations, so intellectual education consists largely in establishing associations between related ideas and in properly coördinating various

mental processes. Knowledge is a system of correctly coordinated or related ideas.

(4) Motor training actually gives results. Experience shows that the mentally deficient are benefited more by motor, industrial arts and occupational training than by literary instruction.

5. Opening exercises or assemblies

The opening exercises can, if properly planned, be made to yield rich cultural returns in the special classes. They afford opportunities for assembling all the pupils of the school, and for building up a wholesome esprit de corps for beginning the work of the day on a very high plane; for enabling the teachers to give "inspirational talks" with a view to arousing aspirations in the children to live lives of noble service, talks on etiquette, morals, manners, good behavior, character-formation, patriotism, physical and mental hygiene, current events, important happenings, the significance of special holidays; for allowing the pupils to enjoy instrumental and vocal music, to partake in the singing, to receive training in singing, and voice and speech improvement, to declaim, recite memory gems, whistle, sing, or play an instrument individually, to dramatize, and to participate in plays.

6. Speech correction

The teacher of the special class must devote much time to speech improvement and the correction of speech defects (of the uncomplicated type, such as indistinct articulation, lisping, lalling, defective phonation) because so many of the pupils are subject to slovenly, inarticulate, defective, and incorrect speech. In our survey of speech defects in the St. Louis schools it was found that 26.3 per cent of the pupils in the special schools for the mentally defective (which, how-

ever, contained some borderline and backward) had speech defects (exclusive of minor imperfections among the imbeciles), as against 2.8 per cent of the pupils in the regular elementary and high-school grades. The improvement of speech accordingly constitutes one of the important specialties in the curriculum for defectives. A considerable part of the speech training can be given incidentally in connection with reading, spelling, language, and vocal music, but separate corrective exercises must also be given according to individual requirements.

7. Music

Most of the mentally deficient enjoy music, especially the rhythm, the quick staccato tempos, and simple familiar airs. Many possess considerable musical ability. Some can hum tunes who cannot read the words; some possess good voices and sing correctly in tune; some can learn to play easy selections on the piano, mouth harp, or different band instruments. Because of the musical ability possessed by some of these children the parents find it difficult to accept the examiner's verdict that they are feeble-minded.

Musically inclined imbeciles. H. D., who had spastic paralysis in the left leg, impaired vision, internal strabismus, at the age of 12 years had a mental age of 4.4 by the 1911 scale. She had acquired very little in school after three years of discontinuous instruction, but she could hum tunes, and play simple melodies on the piano by ear. She was able to learn the words to many popular airs and sing them fairly well. The mother protested against the diagnosis of imbecility. F. C., a male imbecile with partial motor aphasia and a mentality of less than four at the age of 13.5, who could with effort repeat words fairly well but who talked in grunts and mumbles, was exceedingly fond of music, was able to hum a considerable number of tunes from memory, and partook with gusto in the singing in the Sunday school. D. B., a very excitable, restless girl subject to athetosis, and having a mentality of three at the age of eight, sang catchy tunes readily, was very fond of the graphophone, and

was able to select the disks she enjoyed and place them on the instrument, although she could not read a word.

Value of music. A special class without vocal and instrumental music is almost an anachronism. Music should be provided in abundance, not only for the sake of furnishing enjoyment to the children, but for purposes of training. It is a superior medium for arousing attention, energizing the child's activities, developing motor coördination and grace, training the voice, improving the articulation, developing a group consciousness, socializing the child, and providing esthetic culture.

Apportionment of time to the various activities. It is manifestly unwise to attempt to lay down inflexible rules regarding the relative amount of time to devote to the different branches. One of the essential requirements of special-class work is that the program must be flexible so that the work may be adjusted to the needs of each pupil. However, for the average mentally defective child we would recommend that the time be apportioned about as follows: physical training, 10 per cent; literary branches, 35 per cent; industrial arts training, 35 per cent; opening exercises, 9 per cent; intermissions, 8 per cent; and formal sensori-motor training, 3 per cent. It must be distinctly emphasized that these divisions merely represent general tendencies. Low-grade children should be given more formal sensori-motor training and manual work because they acquire few useful literary skills, while children with ability in the literary branches should be given more academic training. As a rule more time should be devoted to developing a child's talents than to overcoming his conspicuous defects, which frequently respond poorly to corrective or remedial treatment in the mentally defective. Of course, children above the level of feeble-mindedness should give more time to the literary studies.

For daily programs or schedules of work and more detailed consideration of the special-class program, see the references at the end of the chapter.

II. QUALIFICATIONS NEEDED BY THE TEACHER OF THE MENTALLY DEFICIENT

The special-class teacher needs the qualifications required by all good teachers: "A rich personality, human sympathy, insight, and scholarship," and we would add, faithfulness to her trust and loyalty to the constituted authorities. There are, however, certain traits or qualifications which are needed in superlative degree by the teacher of the mentally deficient. What are these qualifications?

1. The special-class teacher must possess a good fund of buoyancy, optimism, and sympathy. She should grade 100 per cent plus on humanity, patience, and cheerfulness. Fortunate is the teacher if she is constitutionally euphoric and patient. Otherwise she must assiduously cultivate these traits, for she will be dealing with pupils who have been "trigging the wheels," whose minds work very slowly, listlessly, and reluctantly, and who, even when they try their very best, cannot catch up with the normal rate. The impatient teacher will chafe under their slow, laborious rate of progress, and may become rigorous, petulant, and cross. The special-class teacher must be able to exercise self-control. She must keep a "firm hand on the governor." She must be able to meet defeat and disappointment with a smile, and with a resolve to return to the task with renewed determination. She must be able to get joy and inspiration from small accomplishments and promises of success. A sunny disposition will enable the teacher to laugh away her difficulties. Her radiant smiles will prove to be a veritable "open sesame" to the soul of the child, and will do more than anything else to melt icebergs of indifference or break down

barriers of hostility. At the Vineland Training School the answer to the query "Do you belong?" is a smile. The contagion of a smile is irresistible among children and even among grown-ups. Certainly these children, who may have become diffident, discouraged, gloomy, or pessimistic because of their past failures, deserve a bright, cheerful teacher, filled with the milk of human kindness, who can be a good materfamilias, or at least a good substitute for a mother, to them, and who can bring them out of their slough of despond.

It is easy for teachers to adore children who are beautiful and lovable, but it may not be so easy to sympathize with those who, because of defects for which they are in no wise responsible, are not distinguished for pulchritude or amiability. In order to be able to sympathize with such children the teacher must have imaginative insight. To appreciate the children's condition, she must be able to exchange rôles with them. But this is no easy matter in the absence of the necessary background of information concerning the child. This information which the teacher should possess should include:

(1) A knowledge of the child's physical condition, past and present. Recognition of the existence of physical handicaps will often temper one's judgment and modify one's attitude toward a child. We will assume quite another attitude toward a child we cannot teach to read when we discover that he is a victim of serious diplopia. A summary of the findings from the physical examination should be made available to the teacher.

(2) Information regarding the child's mental status, or intelligence level, which is even more important as it will frequently supply the key to the child's inability to make favorable educational progress. This information will greatly influence the teacher's expectations and modify her procedure. Best of all, perhaps, it will enable her to explain

why the child is not making greater progress, to parents who may be clamoring because the child has not been restored to grade, and who frequently cannot see that the child's limitations are primarily to blame. Whenever possible the teacher should secure an independent judgment of the child's mental status. Parents will be more convinced if they obtain the corroborative testimony of a competent, disinterested psychological examiner. In fact, they are entitled to expert advice before important action is taken affecting the welfare of their child.

(3) Knowledge of the significant facts in the child's history or development, including diseases, accidents, privations, neglect, abuse, pampering, overstimulation, social and educational advantages, schools attended, habits of eating, sleeping, playing, and working; home and neighborhood conditions; the mental and moral status of siblings, parents, and relatives; and the like. Such data may be secured from the school's visiting teacher, social worker, nurse, attendance officer or bureau of tests and examinations, or from the charity organizations' clearing houses or confidential exchange. Or the mothers may be asked to come to school to confer with the teacher, or the teacher may make personal visits to the home for observation, interview, establishing cordial relations, and giving instruction in the proper care of the child and the home. The view is frequently expressed that home visits should become an integral part of the special-class teacher's work. Such visits are often productive of beneficial results to the child and to society.

All information confidential. Information secured about the child should be regarded as sacredly confidential. It is not to be bandied about or proclaimed from the housetops. A teacher has no more right to reveal such information than a physician has to divulge confidential or privileged information (any information revealed by the patient to the physi-

cian "which was necessary to enable him to prescribe or act for the patient"), which constitutes an indictable offense. Some psychological examiners, to avoid complications, consistently decline to give out diagnoses or intimate facts learned about the child, limiting themselves to a bare statement of the test findings, an enumeration of the physical defects, and the necessary recommendations.

2. The special-class teacher must be energetic, robust, physically strong, healthy, and nervously stable. These qualifications are now stressed in admitting students to the training schools in practically all of the large municipalities. The special-school teacher should possess these traits, not so much perhaps because the work is arduous and exacting — although if the training is adapted to the capacities of the pupils, the work may be made even less grinding than the teaching of forty or fifty children of varying ability in the regular grades — but because a high-strung, emotional, temperamental, neurotic teacher is a very bad antidote for high-strung, emotional, temperamental, neurotic children. Most nervously unstable people talk too much; they suffer from a mild logorrhea, and find difficulty in inhibiting the impulse to "rattle on." Moreover, many are inclined to be non-sympathetic and irritable, or at least frequently convey such an impression.

3. That the successful special-class teacher must be able skillfully to individualize her instruction and adapt it to the needs of each pupil needs no further emphasis. But it is necessary to stress that this desideratum cannot be attained unless the teacher possesses, in addition to knowledge, skill and insight, the clinical attitude, and is "psychologically minded," so that she will be capable of intelligently observing, studying, comprehending and interpreting the mental peculiarities and reactions of each child. To be competent to perform this service, the teacher needs more than

mere knowledge of abstract psychological principles. She may possess a mastery of the abstract science of human behavior without being able to apply her theoretical knowledge to the problem of analyzing, directing, and controlling the behavior of concrete cases. Some teachers possess intuitive knowledge of human nature, or natural aptitude for understanding and interpreting human relations. They are born psychologists. But the majority must acquire psychological insight from experience and from appropriate clinical training — from actually testing, observing, studying, and analyzing individual children, and from direct, first-hand contact with numerous types of defectives. Some persons never become “clinically minded” or acquire the “psychologizing attitude” in spite of superior training. However, the superior special-class teacher will be essentially a clinical teacher.

4. She must be capable of remaining plastic, adaptable, and resourceful, and avoid falling into a rut, or a fixed routine of instruction and discipline. This follows as a necessary consequence from what has already been said. The regular grade teacher, because of the size of the class, the numerous subjects which must be taught, and the standardized requirements which must be fulfilled, finds it difficult to avoid lock-stepping, mechanizing and routinizing her teaching and discipline. The special-class teacher must be able to resist the hypnotic lure of the fixed, formal technique of mass instruction, in order to respect the individuality of the child and retain that “individual touch” and individualization of training and discipline which has been accepted as essential for successful special-class work.

5. As a corollary, the special-class teacher should be possessed of a certain attitude as an important prerequisite. She must be interested in work of a non-routine, problem-solving nature. She must be eager in her desire to unravel

the problem of problem pupils and to help them solve their difficulties. These pupils are sent to her for the very reason that they have proved to be insuperable problems in the regular grades. The special-class teacher must enjoy wrestling with new problems, and working out new adjustments and solutions. She must possess the spirit of the true investigator, who receives his highest inspiration and reward from the new facts he has discovered and the difficulties he has overcome by improved methods.

6. Before entering upon her work, the special-class teacher should have pursued an adequate course of special training. She should come into the service as a specialist and not as a bungling amateur. The skillful training of exceptional children is essentially the work of a specialist, and not of an untrained dilettante. It is not sufficient that the teacher be adaptable, interested in the work, sympathetic, possessed of good general ability, and have proved successful in the grades, especially the lower grades. These qualifications, on the basis of which teachers were selected during the early stages of the work, are excellent so far as they go. But they do not confer upon the teacher any miraculous insight into the condition and needs of defective children, nor endow her with the technical skill required to properly treat specific disabilities or unusual mental conditions. Undoubtedly the untrained teacher of intelligence can acquire competency from experience, but it will take years of teaching experience to give her the insight, knowledge and technical skill which can be developed in a brief summer session course, if the course is properly organized. But while the teacher is acquiring her experience the children must suffer because of her inexperience and incompetence. The work of amateurs is bad enough for normal children, though most of these will press ahead in spite of poor teaching. With various types of defective children amateur experimenting will prove ex-

ceedingly wasteful, and sometimes quite fatal. Experience is a slow, wasteful, costly teacher. A teacher of average ability who had been employed in a high-grade private school for defectives reported that she received more information, perspective and comprehension of the problems, and acquired more skill for doing a high quality of industrial arts work from a six-weeks' summer course than from her six years of practical experience in training deficient. The course of progress due to mere experience is halting, tortuous, uncertain, and narrowly limited. Men continued for thousands of years to repeat the same useless movements in laying bricks until a simple experiment revealed better methods. There is no need for the teacher to go through the wasteful process of trying to discover for herself how to teach subnormal children. A good training course will familiarize her with the "garnered wisdom of the world," and with the best current thought and practice.

Need of special training now generally recognized. The view is gaining wide acceptance that the teacher for the mentally deficient is just as greatly in need of special training as the teacher of domestic science, manual training, speech defects, or kindergarten work. According to the writer's investigation in 1913, seventy per cent of the one hundred and two cities replying did not at the time appoint, or had decided not to appoint in future, teachers for the classes for defectives who had not had special preparation for the work. Some cities have gone farther, and require the candidates to pass a special qualifying examination after having pursued a special course of training. To contend at this stage of development of special-class work, as has been done, even by educators (fortunately by no one who has made any contribution to the work or who possesses any claims to recognition) that the chief qualification needed by teachers for mental defectives is the ability to nurse, mother, and care

for the children, is to fly directly in the face of enlightened practice, and to affront the intelligence of the skilled workers in the field. The teacher's chief job, in special as well as in regular classes, is to develop the intelligence, character, ideals, knowledge, sentiments, and skill of her pupils.

Amount of training required. There is, however, no generally accepted standard regarding the character and the amount of special training necessary for the preparation of skilled special-class teachers. Some contend that the minimum requirement should represent the equivalent of a college course, or four years beyond the high school. Some hold that the teachers should be trained from the outset for work with defectives, as kindergartners or manual training teachers are now trained. Some hold that the teacher should first finish a two years' normal-school course, and then secure one or two additional years of specialized training. Others consider that one semester or a six weeks' summer course will suffice if the teacher is a graduate of a recognized normal school and has several years of teaching experience. The Missouri regulations, prepared by the author, require for State certification at least eight semester hours' credit in special work in addition to a normal school diploma, or its equivalent.

The majority of teachers of the mentally deficient now in the service probably have only had a six weeks' special course. Eventually two years of specialized training in addition to the two years' normal school course may be established, by common consent, as the minimum requirement, if the present salary scale continues in force. But the country at large is not yet ready to take this step. The most that we can do at the present juncture is to insist that graduates from the regular normal school course should be required to pursue a special course for a year, a semester or a summer session before they may be accredited for special-

class work. In terms of credits, the very minimum requirement should be six or seven semester hours of credit in the strictly technical branches. A few years of contact with normal children in the lower grades will, in my judgment, prove advantageous. It will provide perspective and standards of judgment regarding normal modes of response, growth, and improvement, and familiarity with the recognized teaching methods for normals.

Nature of training. A reasonably adequate or balanced course of study (assuming as prerequisites the usual professional teacher-training courses) should include a course in clinical psychology and psychopathology, dealing with the methods used in making clinical examinations of mental deviates, together with the significant scientific facts discovered by such examinations;¹ a practicum in the first-hand clinical examination and testing by laboratory methods, including social investigations in the field, and the working up and presentation of case-histories; a course on mentally inferior children (e.g., such a one as the lectures on which this book is based); a course in the details of the corrective pedagogy for the mentally retarded and deficient; a course in observation and cadet or apprentice teaching in all the special-class activities, with a variety of grades and types of defectives, under the supervision of expert demonstration and critic teachers (the training in this department to be closely correlated with the theory department); various courses to develop teaching skill in sensori-motor and kindergarten activities, plays and corrective physical training, a great variety of different types of industrial arts work, and the correction of speech defects (some of this training can be secured in the observation and practice course).

Need of basic manual training course. It cannot be emphasized too strongly that the special-class teacher must

¹ I hope to have the course I have given in book form eventually.

have had a basic course in manual training. She must be thoroughly trained in the care, adjustment, preservation, cleaning, and sharpening of tools. She must know how to sharpen all kinds of tools (although in the large school systems the sharpening will be done by an employee), and how to clean paint brushes. She must understand the necessity of keeping a neat shop, and of placing the tools and objects made in their proper places after each exercise.

Necessity of supervising children's manual-training work. Moreover, it is of the utmost importance that the teacher should so train the defective pupils that they will adjust the tools properly, that they will not damage the tools through careless or rough use, that they will not waste any of the materials, and that they will take pride in keeping an orderly shop with everything in its place and no shavings or débris left lying on the floors or the work-benches. I should not refer to these very elementary considerations were it not for the wanton waste of materials and injury to tools which I have witnessed in some special classes. I have seen boys sawing vigorously in the iron base of a miter saw. I have seen boys chiseling against nails, planing against a projecting iron in the work-bench, planing against the grain with an improperly adjusted blade, and sawing large boards into pieces when there has been available a large supply of pieces of the right size. The teacher should understand that the activities in the manual-training room must be watchfully supervised.

7. Not only should the teacher qualify for the work before receiving an appointment; to keep abreast of the times, she must grow and develop after she has entered the service. This can only be done through independent study and investigation, through pursuing extension and summer-school courses, and through the reading of new books and technical journals. The teacher should read at least two or three new

books and two or three journals every year dealing with her specialty or closely related topics.

The rewards of special-class teaching. Many teachers who desire to escape from the drudgery, formalism, and lock-step of mass instruction will regard the opportunity to do individual work with small numbers and to render a high type of social service as compensation enough for entering upon special-class work. I have known special-class teachers who have been given opportunity to return to the grades but who have preferred to remain in the specials. Others after a period in the grades have asked to be returned to the special classes. Nevertheless the large majority of teachers shrink from special-class work, either because they consider that the work is too strenuous, or that it does not offer the inspiration which comes from perceiving growth and development in normal children — which is one of the chief sources of satisfaction to the real teacher — or because they fear the children are unattractive or repulsive and more difficult to control. In order, however, to induce teachers to make adequate preparation and secure a strong personnel for the special classes, the practice has become very general of offering a differential or a bonus to special-class teachers. Seventy-five per cent of the cities answering my questionnaire in 1913 paid a differential varying from \$50 to \$300 a year, while eight per cent gave no increase, the others failing to supply the information. This practice undoubtedly attracts many superior teachers who would not otherwise spend time and money to fit themselves for the service. The payment of a differential to well-qualified and meritorious special-class teachers is thoroughly justifiable. The payment of a bonus as an unearned perquisite is indefensible.

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PART III

**THE SOCIAL MENACE OF THE FEEBLE-MINDED, AND
THE PROGRAM OF CONSTRUCTIVE ENDEAVOR
IN THEIR BEHALF**



CHAPTER X

RELATION OF FEEBLE-MINDEDNESS TO (I) HIGH FECUNDITY AND (II) DEGENERATE PROGENY

The possible menace of the mentally defective classes. The presence of the feeble-minded in the body politic sometimes creates various grave social problems, for two important reasons. On the one hand, many homeless mental defectives fare very badly when turned adrift to shift for themselves without proper protection or support. They are bandied about from pillar to post, and become the innocent butts of the village jesters and the helpless victims, dupes, or cat's-paws of all kinds of human vultures or evil designers. On the other hand, some of the feeble-minded who are subject to various anti-social proclivities, will become aggressive evil doers and violators of the laws and conventions of society. The following two chapters will be devoted to a brief critical consideration of the possible ways in which the mentally defective class may become a positive menace to society. The indictment repeatedly lodged against the feeble-minded contains six distinct counts.

I. It is alleged that the feeble-minded produce a large progeny of both legitimate and illegitimate offspring

Contradictory views regarding the fertility of the so-called degenerate classes. On the one hand, there are writers who contend that neuroticism represents a "progressive degeneration" leading to insanity, epilepsy, idiocy, diminished vitality, sterility, and eventually final extinction. Féré conceives of neuropathic diathesis as a "dissolution of heredity," while W. W. Ireland holds that "there is always a

tendency to return to the normal or average condition of the race."

On the other hand, the literature of the last decade, particularly popular dissertations of a semi-scientific and a eugenic character, has been permeated with repeated warnings that all classes of neuropaths are multiplying much faster than the general population, and that it is only a question of time when civilization will be completely swamped by the onrushing tide of degeneracy. It has been especially emphasized that the feeble-minded represent a biologically vigorous and highly fertile stock which, instead of tending to die out, is propagating at a much faster rate than the general population.

Nature of the supporting evidence. The belief in the heightened reproductivity of the feeble-minded is based on estimates and observations of individual instances and various comparative statistical investigations of the fertility rate of parents who have been alleged to be feeble-minded and of those alleged to be normal.

A. F. Tredgold avers that it has been "amply demonstrated" that the birth rate is greater in feeble-minded and psychopathic stock. He found an average of 8.4 births among 150 aments from "markedly psychopathic" stock (usually only one parent being tainted), as against an average of 4.6 for the general population of England and Wales (based on the statistics of 1876). However, in a block of 19 married feeble-minded mothers he found an average of only 4.2 children, and in a block of 42 unmarried feeble-minded mothers only 1.8. C. P. Lapage reports an average of six children in 500 families in each of which there were one or more feeble-minded children; W. W. Ireland, an average of 6.2 children in 204 families with "idiots"; Kerlin, an average of 5.6 in 100 families; and Ettie Sayer, an average of 7.6 births in 100 families having children in the London special

classes as compared with an average of 5.0 births in 100 families having children in the regular grades in London, every seventh child on the registers in the special and regular classes having been impartially selected for investigation. The average number of children of 22 alleged feeble-minded mothers in New York was 6.6. In D. A. Heron's tabulation the average size of the families in various pathological stocks ("deaf mutes, degenerates, criminals, insane, mentally defective, and tuberculous") was 6.2, as against 5.3 in normal stocks selected from intellectual, artisan, and working classes, an average difference of 0.9. The largest families were found among mental defectives living in London (7.0), exclusive of married female inebriates (an average of 9.2), the childless inebriates not being included.

In the investigation of the family lines of 310 inmates in the Vineland Training School, which was pushed several generations into the past and which involved the tabulation of 12,922 individuals, the alcoholics (families of "drunkards") averaged 1.4 children more per mating than the non-alcoholics (5.5 versus 4.1), the "heredity" group 0.7 more than the group in which "no cause" for the mental deficiency was assigned (4.5 versus 3.8), but 1.2 less than the "neuropathic" group (5.7). In matings in which both parents were rated as feeble-minded, the average was 0.6 greater than in matings in which only one parent was rated as feeble-minded (5.2 versus 4.6), 0.5 greater than in the matings of two alleged normal persons (4.7) but 0.3 less than in the matings of inebriates.

The average number of children "per parent" in the Nam Family (which is referred to again in the next section) was 4.0, or exclusive of the mothers of the fifth and sixth generations who were still reproducing, 4.2, the modal number being two.

According to H. H. Laughlin the average number of chil-

dren surviving over two-and-a-half years was 4.6 in 1000 "families of defectives" and 4.4 in 700 "normal families," an insignificant difference.

The writer compiled various data from the different clinical record blanks of a considerable block of consecutive cases examined by him in the St. Louis Psycho-Educational Clinic, by methods described in *Causative Factors of Mental Inferiority and the Prevention of Degeneracy*. These data are unique in that they are not based on selected institutional cases from a restricted social level or of a restricted mental classification, but on public school pupils of different social status and different levels of intelligence varying from idiocy to normality. These children undoubtedly spring from a higher social and economic stratum than the institutional cases on which practically all similar American and nearly all similar European studies thus far published have been based.

After having ascertained the total number of siblings in each family of the clinic cases, the average number was computed for all the cases in each intelligence category. The total number of siblings, including the clinic cases, was 4324.

The average number of children in the families containing clinic cases classified in the same intelligence category is given in the third column of the tabulation shown in Table 2, page 269.

It is seen that the offspring were the most numerous in the families containing morons, followed by those containing children of backward and borderline grades. As compared with the general average, the families which had mental defectives showed an average excess of 0.63 child per mating, the excess for those which had morons amounting to 1.3, and for those which had backward children 1.0. Families having "normal and retarded" children averaged 1.2 children less than those having mental defectives.

TABLE 2. AVERAGE NUMBER OF SIBLINGS OF THE CASES IN EACH INTELLIGENCE CLASSIFICATION

INTELLIGENCE CATEGORY	NO. OF CLINIC CASES IN EACH CATEGORY	AV. NO. OF CHILDREN IN THE FAMILIES HAVING CASES IN EACH CATEGORY	PER CENT OF FAMILIES HAVING 8 OR MORE CHILDREN
Supernormal.....	1	5.00	..
Normal.....	42	3.38	4.76
Retarded.....	65	4.83	18.27
Normal and retarded.....	107	4.26	13.08
Backward.....	301	5.87	27.24
Borderline.....	98	5.69	28.57
Deferred.....	52	4.84	32.69
Morons.....	133	6.15	34.58
Imbeciles.....	97	4.57	14.43
Idiots.....	5	4.40	..
All feeble-minded.....	235	5.46	26.08
All cases.....	794	4.83	19.12

The ascending groups in the table represent ascending levels of intelligence, the "retarded" being less backward than the "backward." The average amount of retardation and average I.Q.'s for these categories have been given in *Problems of Subnormality* and *The Value of the Intelligence Quotient for Individual Diagnosis*.

The difference is thrown into sharper relief by computing the percentage of the families which had eight or more children, as has been done in the last column. The excess for the families with mental defectives amounts to 6.9 per cent compared with all the families and 13 per cent compared with the families with "normal and retarded" children. The excess for the matings in which there were morons compared with all the matings was 15.4 per cent.

It is evident from the above summary that the recorded data are quite discrepant and that there is no basis in fact for the categorical assertion repeatedly made, that feeble-minded mothers average twice as many children as normal ones. Not only have most investigations disclosed a much smaller difference, but the total number of direct descend-

ants has actually been found to be fewer in some defective strains than in normal strains which have been traced through a number of generations. Thus the investigation of the illegitimate lines of the Kallikak and Garland families yielded only 480 and 437 offspring, respectively, as compared with 496 for the normal legitimate line of each of these two families.

Inaccuracy of data. It must be freely admitted that the records of births which have been obtained are not very accurate, and that the inaccuracy of the original data may be largely responsible for the discrepancies found. The inaccuracies may be due to a number of causes.

(1) To the incorrectness of the diagnosis. Many persons have been diagnosed as feeble-minded or normal offhand on the basis of mere reports, or a mere interview, or a superficial examination, or without any examination whatever. Many of the examinations have been made by "field workers" who are neither trained examining psychologists nor neuropsychiatrists. Moreover, numerous diagnoses of feeble-mindedness have been based almost solely on arbitrary, and frequently inadmissible, standards of intelligence retardation as determined by so-called measuring scales of intelligence.

(2) To the failure to secure accurate data on the number of abortions, miscarriages, or deaths, or to compare families in which the child bearing has been completed.

Stillbirths and infantile mortality. Case histories and statistical compilations indicate that there are more stillbirths and infant deaths in the families of the mentally defective than in the families of the normal. Of eleven children in one New York family of "defectives," three were stillborn, four died while teething, two died from diphtheria, leaving two alive, one of whom was classed as feeble-minded. Of the fifteen children of the feeble-minded and immoral

"Marvin" woman from New York, seven were dead, including one stillbirth. Of 146 children of 22 mothers from New York who were alleged to be mentally defective, 35 or 24 per cent died in infancy. Of Tredgold's 1269 children of 150 aments, 170 or 13.3 per cent were stillborn, and 315 or 24.8 per cent died after birth, giving a total mortality of 38.2 per cent. Of his 158 children of 19 married and 42 unmarried feeble-minded mothers, 40 or 25.2 per cent died in infancy. In Ettie Sayer's families containing the normal children, the mortality was 28.6 per cent (including 23 miscarriages which comprised 4.5 per cent of the 506 children), and in the families containing the feeble-minded children 38.7 per cent (including 101 miscarriages, which amounted to 13.2 per cent of the 761 children), hence the average excess of the survivors in the latter families was reduced to 0.8 of a child for each mating. Clark and Stowell assert that one fifth of mental defectives die under one year of age from infectious diseases and inanition. In the illegitimate line of the Kallikak family, 82 or 17 per cent died in infancy, as compared with 15 or 3 per cent in the legitimate line. When only the survivors are considered the average number of children to the mating is about the same for the different groups of the 12,922 who were charted in the Vineland investigation, the figures being as follows: 3.8 in the "heredity" group, 3.7 in the "accidental cause" and unclassified groups, and 3.6 in the "no cause" and neuropathic groups.

These percentages of stillbirths and early deaths are higher than those reported for the general population. In New York City between 1898 and 1909 the death-rate per 1000 varied for children under five years from 67.2 to 49.5 and between 1910 and 1922 from 47.7 to 23.8, the average for 44 years being 68. For children under one year it varied from 205 to 137 between 1898 and 1909, and from 126 to 71 between 1910 and 1922. The rate for stillbirths per 1000

births varied from 1.72 to 1.45 between 1898 and 1909, and from 1.41 to 1.07 between 1910 and 1921. According to Farr and Newsholme of England 4 per cent of all births are stillbirths. Couvelaire found that 4.6 per cent of 834,411 births in France were stillbirths (including seven months' fetuses dying during gestation or parturition and infants dying within three days after birth), as compared with 7.2 per cent in Paris (of which many were known to be voluntary abortions).

Post-infantile mortality. The post-infantile rate of mortality also seems to be higher among mental defectives. G. E. Shuttleworth is quoted to the effect that the mortality is nine times as great for mental defectives as for normals for the age periods from five to ten, ten to fifteen, and fifteen to twenty. Tredgold says that the death rate is the highest from fifteen to twenty, when it is the lowest for normals, giving a mortality rate of thirty per thousand for aments as against twenty for the general population. M. W. Barr found that only 83 of 625 mental defectives were alive at the age of twenty-five, most dying between ten and twenty. Clark and Stowell found among one thousand deaths of mental defectives that most deaths occurred before twenty. Lapage, on the other hand, holds that the death-rate between five and twenty is not necessarily unusual.

Although the efforts of modern hygiene, medicine, and social betterment unmistakably tend to reduce the mortality rate among all classes, thereby contributing toward the perpetuation of all types of weaklings, it is probable that the mortality rate is still so much higher among mental defectives, neuropaths, or degenerates as to counterbalance, wholly or in part, the alleged tendency of the latter classes to multiply more rapidly than the general population.

Explanation of the alleged heightened rate of reproduction of the mentally defective. Conceding that there may

be more children born in the families of the feeble-minded than in the families of the normal (although, as we have seen, this is not always the case), what is the explanation? A number of suggestions have been offered:

(1) Economic pressure, or the inability to make a living, forces many mentally defective girls into immoral careers. This is undoubtedly true, but the natural consequence of such conduct is ultimate sterility supervening upon venereal infection.

(2) The feeble-minded beget offspring earlier, and this tends to increase the number of the progeny. This is no doubt true in individual instances.

(3) It is alleged that the feeble-minded are oversexed; that their sex life is more elemental, turbulent, violent, and unrestrained. It is true that some feeble-minded individuals, particularly among the females, are conspicuously lacking in the sense of shame or in modesty — perhaps it should be said that they are unmodest rather than immodest — that some are subject to excessive erotomania, sometimes verging on nymphomania, and that some are given to exhibitionism, the practice of self-abuse, or excessive venery. But this factor, at most, is only a minor one. My observation of mental defectives in special classes indicates that as a class they are not oversexed. Even Goddard, who has specially emphasized the immorality of the feeble-minded, concedes that their "sexual instinct" is underdeveloped rather than "overdeveloped," and ascribes the apparent excess of eroticism to "lack of control." The percentage of immorality among the 1918 feeble-minded cases investigated at Vineland was only 8.8 per cent, as compared with 13.2 per cent among 113 "normals."

(4) Their lack of judgment, intelligence, and ability to resist or protect themselves render mentally defective girls ready victims, especially of normal men. This factor is very

probably of greater moment than inherent viciousness or eroticism.

(5) It is alleged that their fertility or fecundity rate is abnormally high. Individual cases are often cited in support of the claim that the feeble-minded are "prodigiously fertile." The union of an imbecile man with a delicate defective woman resulted in a progeny of nineteen children in twenty years, all rated as defective. A wayward, degenerate girl in New Jersey died after giving birth to her thirteenth child. "Marvin" had fifteen children in nineteen years. An English defective had eighteen children. While such instances could be multiplied, there is, in my judgment, little force to this explanation. Similar instances can be found among normal women. Thus among the parents in one group of my clinic cases, I found two families with seventeen children each in which the parents were normal.

(6) They do not practice birth-control to nearly the same extent as do normal persons. This is undoubtedly one of the prime reasons for such heightened birth-rate as actually exists in individual cases among the mentally defective.

It follows from the foregoing discussion that we are inclined to discount largely the calamitous predictions respecting the decadence of the race so vociferously broadcast in the contemporary "literature of despair," based on the hypothesis of the "prodigious productivity of the mentally defective strains."

II. It is alleged that the feeble-minded produce a neuro-pathic, degenerate, or dysgenic progeny

The worst aspect of the reproductivity of the feeble-minded is the belief that they "breed true," or "reproduce their kind." This belief is based largely on the "pedigree charts" or "family histories" which have been worked up for large numbers of mental defectives, as well as for epilep-

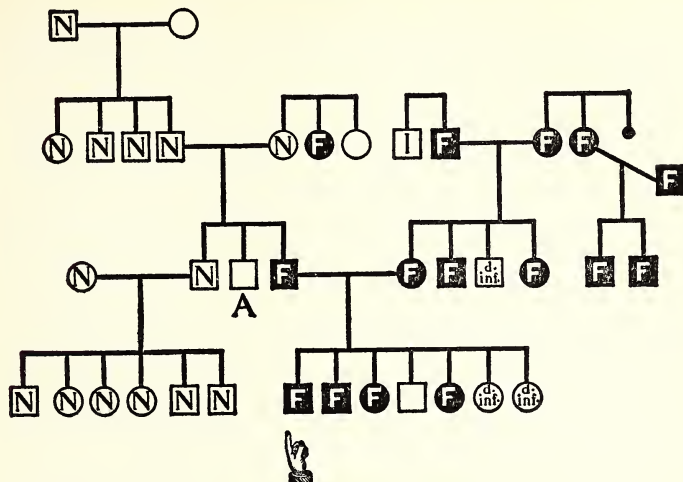


FIG. 13. HEREDITY CHART

Squares indicate males and circles females. *F*, feeble-minded. *I*, insane. *A*, alcoholic. *N*, normal. *D. inf.*, died in infancy. ●, born dead. The feeble-minded subject whose ancestral history is traced is indicated by the index finger.

tics and psychotics. The "heredity chart" on this page shows how heredity data are charted, and also illustrates the dictum that "when both parents are feeble-minded all the children will be feeble-minded" (to which, however, exceptions have been found).

Classical cases of dysgenic heredity. Numerous strains of "cacogenic" or "degenerate" stocks have now been traced through several generations, with such degrees of accuracy of the recorded data and of the interpretations as investigations of this character permit. It must here suffice to give a very brief summary of the records of the most notorious of these defective family lines, in order that the student may obtain some realization of the type of cacogenic data on which eugenic conclusions are largely based. The names given in the following histories are fictitious.

The Jukes. (Investigated by R. L. Dugdale in 1874 and reinvestigated by A. H. Estabrook in 1915.) The progenitor of this strain, Max Juke, of Dutch extraction, was born between 1720 and 1740 in Ulster County, New York, in an unfertile, inaccessible valley, where the descendants lived until 1880, when they were scattered as a result of the abandonment of the cement industry. Max was a jolly, companionable, hard drinking hunter and fisherman who was averse to toil and only worked by spells. His two sons, one of whom was a thief, married two sisters from a family of six girls. One of these girls left the country. The other three, two of whom were immoral, married men who were rated as defective in some respect. From these five notorious Jukes sisters has sprung a strain of ignorant, lazy, shiftless, licentious, immoral, defective, pauper, and criminal progeny, whose descendants had spread into fourteen states of the Union by 1915. During a period of 130 years, 2094 persons of Juke blood (that is, descendants of the five original sisters) and 726 of *x*-blood (that is, persons who have "married into or consorted with the Juke blood") have been traced, or a total of 2820. The following is a partial record of the social liability of this tribe, together with the estimated cost to society of their anti-social behavior up to the time that Estabrook made his investigation, when many were still young children:

Total loss to society in crime, pauperism, syphilis, prostitution, inebriety, mental deficiency.....	\$2,516,685
366 pauper adults, for relief	83,710
171 criminals, for 375 years of imprisonment.....	75,000
300 arrests, for trials.....	30,000
80 habitual thieves, for 960 years of depredation.....	115,200
10 murderers.....	12,000
175 ¹ prostitutes, for 2625 years of debauchery.....	787,000
55 ¹ specifically diseased women who contaminated 660 persons, cost of treatment and men's loss in wages.....	693,000
875 years of loss from productive industry by the courtesans.....	109,375
282 were intemperate since the third generation, with a drink bill of.....	423,000

277 of 541 female Jukes (51.2 per cent) were harlots before marriage.

71 had bastards before marriage, and 36 after marriage.

¹ Higher figures are given for generations II to IX on page 83 of Estabrook's monograph.

24 kept brothels.

2159 of the progeny were legitimate.

301 were illegitimate.

From the sixth to the ninth generation, 468 were doing well socially, and 418 poorly.

378 died under age five.

131 were classed as mentally deficient.

"All the Juke criminals were feeble-minded" — an overstatement, in all probability.

17 were blind.

4 were insane.

9 were epileptics.

1258 descendants of the five original sisters were alive in 1915: of the males over 19 years of age and of the females over 15, 65 were good citizens, 255 fair, and 305 anti-social (or 43 per cent of 705); 51 were prostitutes at the time, while 82 formerly had been; 41 were criminals, 83 were intemperate, 152 industrious, and 103 "marked cases of mental defect."

Tribe of Ishmael. (First studied by O. C. McCulloch in 1888 and more recently by the Eugenics Record Office.) This has been an exceedingly prolific strain, especially notorious for its pauperism, licentiousness, prostitution, and "gypsing." The family migrated from Virginia, Maryland, Pennsylvania, and the Carolinas through Kentucky (about 1790) and Southern Ohio to Marion County, Indiana. The son of the progenitor married a half-breed and moved to Indianapolis in 1825 (according to Estabrook) where three of his sons married three sisters from a pauper family. It has been estimated that there were 6000 Ishmaelites from 400 family heads in 1885, and that there are 10,000 to-day. They have migrated to many States, but mainly to Indiana, Kentucky, Illinois, Ohio, Michigan, Iowa, and Kansas. There is scarcely a family without some paupers and mendicants, while some lines contain many generations of beggars. Three generations were found in a poor house at one time. Many are given to gypsying during the summer time, in wagons or on foot, camping in the creek bottoms in wagons, hollow trees, or empty houses, and living off the country by begging or stealing. Toward the approach of winter they have been accustomed to return to Indianapolis. Many have changed consorts at will. Of four members of one fraternity, one was mated six times, two five times each, and one seven times. A daughter of the latter woman, a prostitute, was married ten times without

being divorced. There were 121 known prostitutes in the fourth generation. It has been estimated that this tribe has cost the country more than the Jukes.

The Nam Family. (Investigated by A. H. Estabrook and C. B. Davenport.) The progenitor, a Dutchman who married an Indian princess, wandered from New York to Western Massachusetts about 1760. One of his grandsons, Joseph Nam, a Revolutionary soldier and vagabond, had eight children, of whom five migrated to New York State about 1800, the majority settling in or near "Nam Hollow." As time went on, some prospered, others remained "ignorant, unintelligent, indolent, and alcoholic." Their children were uneducated and grew up in an environment of intemperance and immorality (the besetting sins of this tribe). They lived in huts and hovels, sleeping on beds of rags, thirty-two people of both sexes being found by the investigator occupying one room in the winter time.

Of the 1795 descendants traced, 852 sprang from the original Nam, 55.5 per cent of these being in the third generation. Twenty-two and six tenths per cent of all the matings were consanguineous. Of the parents of 695 Nams, 20.2 per cent were born out of wedlock, while 180 children (of all those considered) were born out of wedlock. One hundred and ninety-nine men and 232 women, or a total of 431, were licentious, while only 83 men and 155 women, or a total of 238, were chaste. Harlotry was ten times as common as professional prostitution (which was more common among the Jukes). Eighty-eight per cent of the females and ninety per cent of the males drank to excess. Nineteen were epileptics, 24 insane (7 having been in a custodial institution), three had been in a girls' home, 15 in an orphanage, 11 in poor houses, and 40 in jails or state prisons. The cost to the State in poor relief, institutional care, alcoholism, prostitution, arson, thievery, and murder was estimated at the time of the investigation to be \$1,411,676.

The Hill Folk. (Investigated by Florence H. Danielson and C. B. Davenport.) A "shiftless, weak-minded element" inhabiting a Massachusetts town of 2000 population located among the hills in a fertile valley, was traced partly to Neil Rasp, a poor, shiftless, harmless, alcoholic hunter and basket-maker of French extraction who, according to the authors, had five children by a "feeble-minded wife," all "feeble-minded to a greater or less extent"; and partly to an Englishman called Nuke. Among the men, this strain produced in one line alcoholism, and in another line sexual miscon-

duct. The male cousins in one line were fairly temperate, but the women were immoral. Of 737 people included in the study, 18 were known to be illegitimate (2.4 per cent), 24 per cent of the 82 married women had bastards before or after marriage, 8 married women, or 10 per cent, were prostitutes, 65 persons, or 8.8 per cent of all, received relief of different sorts (37 being State wards), 136, or 18.4 per cent of all, and 50 per cent of the school children living at home, were classified as feeble-minded,¹ while 10 were classed as epileptic. Twenty, or about 25 per cent of the marriages, were cousin marriages. Twenty-four, or 3.3 per cent, showed criminal tendencies, 16, or 2.2 per cent, had been convicted of crime, being sentenced for a total of 37.5 years. The estimated cost to the state from this strain for relief, institutional care, crime, prostitution and alcoholism during somewhat over 60 years prior to the investigation was placed at \$498,260. It is of note that there were relatively fewer criminals and sex offenders among the Hill Folk than among the Jukes.

The German Family of Ada Türcker. From this thieving, vagabond woman, born in 1740, suspected of having been mentally defective, although physically robust, 834 descendants were identified. Of the 709 whose histories were traced, 143 were mendicants, 64 were inmates of asylums, 181 were prostitutes, 69 were criminals, and 7 were murderers. The cost to the Prussian state in pauperism and crime was estimated some years ago at \$1,250,000.

The Garland Family. The Garland and the Kallikak families are unique "experiments of nature" in that they permit a comparison of a "normal strain" with an illegitimate strain each of which has issued from a common male progenitor. The original Garland who died in 1837 (apparently an English line) had an illegitimate child by a mentally deficient woman, but subsequently married a normal woman. Of 437 descendants from the illegitimate stock, 130 were classified as feeble-minded while none was so classified among 496 descendants of the legitimate stock. The data do not indicate whether equally rigid standards of diagnosing mental deficiency were observed in tracing the two lines of descent. The expectation would be that at least a few accidental cases of defect would be found in the legitimate line.

¹ The authors adopt a very liberal concept of feeble-mindedness ("a complex of quantitatively and qualitatively varying factors most of which are negative") which obviously accounts for the high estimate of mental deficiency.

The Kallikak Family. (Investigated by the Vineland field-workers and H. H. Goddard.) Martin Kallikak, Sr., who was of normal stock and a soldier in the Revolutionary war, had a feeble-minded son, Martin Kallikak, Jr. (known as "Old Horror"), by a feeble-minded girl whom he met at a tavern. Martin, Jr., who lived in a mountain hut in New Jersey (most of the descendants have remained in the same locality), married a normal woman by whom he had seven children, five of whom were classed as feeble-minded and two as normal. From this line were traced 480 descendants in six generations, of whom 143 were classified as feeble-minded, 46 as normal, and 291 as of unknown mentality. Thirty-six were illegitimate, 33 immoral (mostly prostitutes), 8 kept brothels in a rural community, 24 were confirmed alcoholics, 3 were criminals, and 3 were epileptics, while 82 died in infancy. Of the 1146 individuals charted from the exogenous marriages, 262 were considered feeble-minded, 197 normal, while the mentality of the others was "undetermined."

Martin, Sr., however, after leaving the Revolutionary Army, married a normal, respectable girl. Of their 496 direct descendants all were declared to be normal, except three men who were "somewhat degenerate" (two alcoholic and one immoral). There were no convicted criminals recorded, and only fifteen (3 per cent) died in infancy. The descendants, who married into the best families, include colonial governors, signers of the Declaration of Independence, founders of a great university, doctors, lawyers, judges, educators, traders, and landowners.

Passing over the histories of other cacogenic strains such as the Pineys (New Jersey), the Hickory Family (Ohio), the Rufer Family (Pennsylvania) and The Dwellers in the Vale of Siddim (Minnesota), the record of an entirely different type of transmission, namely a eugenic line of descent, may be briefly rehearsed.

The Jonathan Edwards Family. At the time the data were compiled, the 1394 identified descendants of this family had contributed 295 college graduates, 12 college presidents, 65 college professors, 100 each clergymen, musicians, and lawyers, 80 public officials, 75 army and navy officers, 60 each physicians and prominent authors, 30 judges, 3 United States senators, one vice-president, and no known convicted criminal.

Accuracy of the pedigree or family history data, and conclusions to be drawn therefrom. It must be frankly ad-

mitted, as already hinted, that family histories cannot, in the very nature of the case, be made very accurate, particularly so far as concerns the record of minor social and moral lapses and the diagnosis of mental defect. The differential diagnoses of the dead of past generations are almost entirely conjectural, based almost solely on hearsay information, or traditional lore, or the record of lawless behavior. Even members of the living generations have been frequently diagnosed as mentally defective without any examination or investigation other than of their record of delinquency or social maladjustment, while many of those diagnosed as mentally defective, usually by field workers, have not fallen far short of the average level of intelligence of the population at large, judged by the findings of the Army Alpha. There is no way accurately to determine what proportion of the reported defectives have been feeble-minded and what proportion dull, stupid, or ignorant.

Moreover, when the investigator has started out with preconceived conclusions regarding the absolute dominance of heredity (possibly as an avowed protagonist of the Mendelian theory of inheritance), the inevitable tendency has been to ignore or minimize the incident factors of the environment. But it is probable that a bad environment usually has hampered the advancement of the cacogenic strains, while a good environment has promoted the progress of the "eugenic" strains. The hereditary and environmental forces supplement and reinforce one another. Many persons who can float in a favorable environment, will succumb in a less favorable one, just as appropriate training in special classes will enable some pupils to function above the level of mental deficiency, who without such training would have stagnated as feeble-minded. Much crime and incompetency among weaklings is traceable to an unpropitious environment, and could be prevented by a vigorous

community program of constructive eugenics. Although an unfavorable environment will drag down the weaker strains more than the stronger ones, it is conceivable that if the progeny of Martin, Sr., had grown up in the environment of Martin, Jr., the character of the ancestral line of the former might have been different from what it is. The environment always supplies the soil, the opportunities for advancement or for deterioration.

Waving aside the unsatisfactory character of the supporting data, it is admitted by practically all the authorities that feeble-mindedness may be transmitted by inheritance to the offspring, but there is lack of agreement as to the extent of the transmission and the laws governing the process. Certain phases of this question have been discussed in *Causative Factors of Mental Inferiority and the Prevention of Degeneracy*. Space permits the repetition here merely of a few of the conclusions reached.

"In the large majority of these cases (extra-institutional mental defectives and subnormals) I have not found any clear-cut evidence of the presence in the family history of the triad which Lapage says constitutes 'neuropathic inheritance'—namely insanity, epilepsy and feeble-mindedness. If these three constitute the evidence par excellence of hereditary taint, the majority of my cases have been non-hereditary.¹ If my cases are hereditary, the 'taint' must be based on minor neuropathies and unrecognized factors.

"Feeble-mindedness may be produced by a variety of factors, either environmental or hereditary, acting separately or concurrently. Both mental normality and feeble-

¹ One of the facts discovered in support of this conclusion, was that only 7.9 per cent of the 1969 children who had attended special public schools for mental defectives during a period of 12½ years were siblings. Lapage found that only 9 per cent of 830 families with a mental defective contained two or more cases. In both investigations the vast majority of mental defectives were isolated or sporadic cases.

mindedness are complex, not simple conditions. The causation is as complex as the conditions. . . . In many cases it is obscure and ambiguous."

But the evidence shows that "many destructive agencies, especially toxins, may injure the germ plasm, or the brain of the embryo or the fetus, or the brain of the young child. . . . Blastophthoric agents which impinge upon the soma of the parents may injure the ova and the spermatozoa, and the germinal defects thus produced may be transmitted to the progeny."

To repeat this conclusion in slightly different words: "destructive, poisonous substances, if sufficiently intense, virulent, or long continued, may modify and injure the soma and the germ plasm of the parents and of the embryo and fetus, either through the direct or the indirect action of the toxins, thereby producing neuronic arrest or degeneration and mental abnormalities and . . . the modifications thus produced may be transmitted to the progeny for one or more generations."

"This doctrine will probably be regarded as heterodox and unscientific, for it has become almost a fixed tenet that the germ plasm leads a charmed, insulated, protected existence, and that it is invulnerable, immutable, and sacrosanct." But "experiments on plants and animals have shown that the germinal constitution can be modified by various blastophthoric stimuli, and that the modifications can be transmitted to the offspring." Some of the experiments on which these conclusions are based will be cited in the next chapter.

CHAPTER XI

THE RELATION OF FEEBLE-MINDEDNESS TO (III) CRIMINALITY, (IV) INEBRIETY, (V) SOCIAL IMMORALITY AND (VI) PAUPERISM AND VAGRANCY

III. It is alleged that the feeble-minded possess strong criminalistic propensities

IN fact, it has been frequently averred that every feeble-minded person is a potential criminal, and there has been during the last decade a tendency to blame the feeble-minded for a very large share of the country's crime, especially the crimes of arson, petty thievery, homicide, and prostitution. It has been repeatedly dinned into our ears that the feeble-minded clog our juvenile and adult courts, and congest our jails, detention homes, prisons, and reformatories, and that the volume of crime could be considerably reduced if the feeble-minded were segregated. Elaborate statistical findings have been cited in support of these conclusions.

Divergent conclusions from surveys of offenders. It would prove bootless to attempt at this place to summarize the multitude of estimates and investigations made by psychiatrists, clinical psychologists, social workers, and intelligence testers, during the last decade and a half, of juvenile and adult offenders and criminals in courts, industrial schools, public school classes for delinquents, detention homes, reformatories, jails, and prisons. Such a summary appeared years ago in Chapter II of our *Problems of Subnormality*. The more significant recent studies of the delinquent and criminal classes are found in the references to Healy, Miner, Williams, Weidensall, Fernald, Hayes, Dawley and Ruml in the Appendix of this book. It must here

suffice to point out that there are very wide discrepancies between the empirical findings of the different surveys. The ratio of mental defectives reported has varied from near zero to almost one hundred per cent. This amazing variation is due in part to differences in the character of the groups investigated, but the chief reason, in all likelihood, is the difference in the standards of diagnosis adopted by the different investigators. The large estimates almost always have been based on certain arbitrarily assumed units of intelligence retardation as determined by "intelligence tests." The same criteria when generally applied would render from ten to forty-seven per cent of the white population of the United States feeble-minded according to the results of the intelligence examination of 1,750,000 recruits in our late army. Fortunately the tendency is now less manifest to "laugh out of court" the conservative estimates made by the writer and a few other investigators long before the army results were available. The writer's estimate, that from ten to fifteen per cent of the "run of mine" of juvenile delinquents are feeble-minded is probably not too conservative.

Feeble-mindedness as such not a prime cause of criminality or misconduct. The greater share of the delinquency of the feeble-minded is not due to outspoken vicious proclivities, or to inherent, or aggressive, criminalistic, or murderous propensities, but to their lack of proper training, of adequate support, control, and protection, to their inherent weaknesses, particularly their defective powers of control or inhibition, coupled with excessive credulity, imitateness, and suggestibility; and to the ease with which they can be victimized and preyed upon by unscrupulous schemers of more astute intelligence. Admittedly some of the feeble-minded are strongly criminalistically inclined. There are types of mental defectives who are exceedingly restless and

obstreperous; who are subject to frequent, and sometimes periodical, tantrums and paroxysms of temper; who are devoid of sympathy or respect for the rights of others, or who lack moral insight; who are quite irresponsible when not closely supervised, who seem to take a fiendish delight in inflicting pain or in committing various depredations, including arson; who are consummate plotters of mischief, confirmed rapists, prevaricators, and pilferers. But this characterization would grossly slander the majority of the feeble-minded. It applies to only a limited number and many of these are sufficiently tractable to respond to appropriate training, as already pointed out (see pages 76-78 and 177-81).

The dull, backward type more aggressively criminalistic than the feeble-minded. Based on experience with public school delinquents, we have previously concluded that it is "particularly the backward pupil who creates the problems of discipline." He is "a more aggressive and intelligent trouble maker and constitutes potentially a greater criminal menace. Judging by our case records, in school he is inclined to be listless and inattentive and to fatigue easily, because the regular studies do not appeal to him. He is unstable, is inclined to be surly, and is subject to attacks of stubbornness. He it is, rather than the feeble-minded child, who is the bugbear of the other pupils whom he teases and annoys, particularly the younger ones. . . . He is unable to compete with the normal and brighter pupils, and so he grows pessimistic and cynical. He suffers from a certain degree of moral obliquity. This fact has also been noted by Pearson, who made a comparative study of intelligent, dull, robust, and delicate children among the English professional classes. He found that the intelligent children were far less sullen, far more conscientious, and more robust than the dull, suggesting a correlation between intelligence and moral-

ity. The ordinary elementary curriculum is maladjusted to the needs of the backward child and does not adequately prepare him for his life work. Because of this, and because of his moral obtuseness, he tends gradually to gravitate into the ranks of the social misfits and industrial incompetents, the vagabonds, ne'er-do-wells, paupers, criminals, and the immoral. We do not say that this is a typical picture of every backward child, but it is typical of many such children, and we believe that a large number of criminals and prostitutes now diagnosed as feeble-minded really belong in our class of dull, backward individuals."

Supporting evidence. In a series of 46 consecutive cases admitted to a public school class for truant, troublesome and ungovernable boys, who were counted among the most refractory boys enrolled in the system, twenty-eight of whom were also wards of the juvenile court, we were able to diagnose only about eleven per cent as feeble-minded, while fifty-two per cent were diagnosed as backward and thirteen per cent as borderline. Among 2774 pupils who were referred for clinical examination during a seven-year period primarily because of suspected mental deficiency or because they were considered to be inferior mentally, 444 had a record of some sort of misconduct. They were reported to be unmanageable in school, or truant, or vicious, or immoral or immorally inclined, or mendacious, or thieving. In comparing the diagnoses, it appeared that there was a smaller ratio of cases of low intelligence in the misconduct group than in the entire group, the deficiency amounting to 11.4 per cent, and 1.3 per cent, respectively, for the feeble-minded and borderline categories. On the other hand, the misconduct group contained comparatively more cases of higher intelligence, the aggregate excess of all those diagnosed as normal, retarded, and backward amounting to about fourteen per cent when compared with the corresponding figures for all

the cases. This group, of course, does not represent an unselected array of juvenile offenders.

Recidivism. One of the most discouraging aspects of juvenile and adult criminality is the tendency toward recidivism, or the frequent repetition of a vicious circle of crime, beginning with some act of misconduct leading to arrest, trial, conviction, imprisonment, parole, or discharge, followed by a continuous round of offenses, fines, imprisonments, and releases. The extent of recidivism is inadequately realized by the public at large. Of 182,000 convicted in England in 1906, 107,000 or fifty-eight per cent were known to have been convicted before, 10,000 or six per cent having been convicted over twenty times. Of 152,432 committed to the Allegheny County (Pennsylvania) workhouse from 1869 to 1912, 71,704 were committed two or more times; 1551, ten times; 361, twenty times; 112, thirty times; 54, forty times; 357, fifty or more times; and the records obviously were incomplete. In 1915-16, 1117 of 2735 in the St. Louis workhouse were known to be repeaters, fifteen having been confined twenty or more times, while 18.1 per cent of the 1163 of the juvenile court cases had a record of repetition. It is doubtless true that the proportion of mental defectives, subnormals, and other types of defectives is larger for the recidivist than the non-recidivist type of offenders. Of eighty-five paroled from Elmira who were pronounced "unquestionably feeble-minded," 37 were re-arrested at least once. One imbecile had six prior arrests and three prior incarcerations, while one "moron" had been arrested nineteen times, usually having been discharged on the payment of fines. Seventeen, or 2.8 per cent of six hundred "mental defectives" incarcerated in an English jail in one year, were known to have had forty convictions, while three had 102 convictions each. The record of female alcoholics in England is particularly bad.

Recidivism and mental defect among English female inebriates. England maintains a number of inebriate reformatories for notorious female drunkards, to which they are committed after four prior convictions for drinking, immorality, and crimes committed while intoxicated. While under confinement, investigations have been made of their mental and physical condition, behavior reactions in the institutions, duration of the alcoholism, number of prior convictions, religion, and education. Apparently the determination of the mental condition was made by the medical officers on the basis of observations and reports upon their behavior reactions.

The classification made of 3032 inebriates was as follows: good or average mentality on admission or six months later, 36.4 per cent; defective mentality, 49 per cent (including "those of low mentality, eccentric, silly, dull, senile, and subject to periodical paroxysms of ungovernable temper"); very defective, 12.4 per cent (including imbeciles, degenerates, and the insane who were difficult to certify); and certifiable insane, 2 per cent. In other words, about 64 per cent were judged to be "lacking in mental balance" and "mentally incapable of competing on equal terms with their normal fellows," while 66 per cent were classed as "physically fit," that is, competent to do hard work. In one block of 865 inebriates, only 3.9 per cent possessed superior education, 52 per cent could read and write, but imperfectly, while 13 per cent could neither read nor write. Their misconduct in the institution, and the number of their previous convictions varied with the extent of mental defect. Sixty per cent of those who were troublesome at one of the reformatories (Langho) were adjudged "mentally defective," as against 27 per cent of the well-behaved. The duration of the alcoholism averaged eighteen months longer for those of defective than for those of average mentality (the difference

being the same between those of good and those of poor education). The average number of convictions for those of "poor" mentality was 28.8 as against 15.3 for those of "good" mentality. Sixty-three per cent of those who had 33 convictions were classed as "mentally defective." Thirteen had been convicted 100 times each, one 115 times in 25 years, one who could not read or write 178 times, and one who had a record of 3 convictions was actually found, after her numerous aliases had been identified, to have 316. In England recidivism has been found to be much worse among female than among male inebriates. Thus there were 3 women for every man convicted from 21 to 50 times, and 32 women for every man convicted 200 times. Apparently the effect of alcoholism is more demoralizing to the nervous system of women than to the nervous system of men, unless, indeed, the men are cleverer in escaping from the clutches of the guardians of the law.

Treatment of recidivists. When an individual's record of misconduct has convicted him of confirmed recidivism, and when the evidence shows that he is incapable of profiting from past experience or from attempts at adjustment or reformation, he should be regarded as "socially or morally irresponsible," or as a "defective delinquent" whether or not he can be subsumed under any of the recognized abnormal or pathological categories (those of the feeble-minded, epileptic, or psychotic), and he should thereafter be placed under permanent or indefinite guardianship in an industrial or farm colony where he may be provided with profitable employment and wholesome diversion. To take such a step is but an act of benevolence to the unfortunate concerned and a measure of necessary protection to the thrifty, law-abiding members of society. A protracted record of social and economic maladjustment, incompetency, and irresponsibility is of far more significance so far as concerns

the disposition to be made of these individuals, than technical quibbling regarding the exact form of the neuropsychiatric diagnosis, or the insistence that the case must first be fitted into some smug procrustean diagnostic category.

IV. There is an intimate association between alcoholism and feeble-mindedness

We have already seen evidence of this relationship in the study of inebriates in England, about two thirds of whom were classed as mentally defective in some respect. There is no one who doubts the connection between inebriety and mental deficiency. D. A. Heron, on the basis of certain empirical data and certain mathematical assumptions, has computed that the correlation between mental defect and inebriety in the general population is about .76 (between .69 and .82). The question at issue is merely this: which is the antecedent and which the consequent condition? Is parental inebriety the cause of mental deficiency in the offspring, or is mental deficiency the cause of inebriety?

Opposed schools of thought. There is, on the one hand, the school of investigators (usually frank Weismannian biologists), which stoutly maintains that deleterious substances cannot exert any influence whatever on the germ plasm, and little if any influence on the developing nervous system of the embryo, fetus, or of the young child. The high incidence of mental deficiency or other types of neurotic or psychopathic disorders frequently found in the family of inebriates, they attribute purely to "neuropathic taint" in the ancestry. The offspring are mentally defective solely because of preëxisting neuropathy in the parents or other relatives. And the neuropathic taint is caused only by prior neuropathy and not by alcoholism. Neither alcohol nor any other toxin can produce an inheritable defect, or

affect in the slightest degree the heritability of a "neuropathic taint."

The Galton Eugenics Laboratory workers are typical exponents of this viewpoint. A. Barrington and Karl Pearson insist that it is the want of mental balance (associated with emotional excitability from religion or race) and the existence of physically strong natures, which are the antecedent conditions of inebriety — as well as criminality and prostitution — because, they argue, there is no appreciable decrease in the mental capacity of alcoholics with age,¹ that is, with the duration of the drinking (the physique, however, being considerably affected by age). The correlation amounts to only $.062 \pm .047$. Alcohol modifies the relation by only one twentieth of its value, hence nineteen-twentieths of the mental defect antedates the period of alcoholism. Ethel M. Elderton, writing from the same laboratory, affirms that "drink has practically no influence on the general health and intelligence of boys and girls, and the little influence it has is in favor of the children of drinking parents; they are healthier and more intelligent."

On the other hand, a prodigious output of memoirs and books has appeared in support of the conclusion that parental inebriety may cause:

Various grades of feeble-mindedness — idiocy, imbecility, morosity (Iwan Bloch, H. C. Marr, F. R. P. Taylor, Lamurien, H. I. Berkeley, Lonnett, R. J. Paris, C. C. Sullivan, Laitenan, Alfred Gordon, Alex Mac Nicholl, and many others) — backwardness, epilepsy (E. Kraepelin, V. Horsley, M. D. Sturge), impairment of will (M. P. Legrain), "constitutional asthenia" (Pierre Janet), and other degeneracies, neuropathies, or psychopathies.

Various kinds of growth abnormalities or deformities of development, often referred to as "stigmata of degeneration."

An increased incidence of sterility, stillbirths, abortions, and

¹ In fairness it must be said that this line of argument, even if correct, has no bearing on the effect of alcohol on the germ plasm or the embryo.

infantile mortality, the destructiveness being greatest for the later pregnancies among maternal inebriates.

An increased incidence of tuberculosis in children, and colic in infancy.

Various growth retardations, including infantilism, dysfunction of the endocrine glands, delay in dentition, lessened weight at birth, and retarded gain in weight after birth.

And the inability of daughters to nurse their offspring (Bunge), even in the case of paternal alcoholics.

It is usually held that the results are worse in the case of maternal indulgence of alcohol during the period of gestation (W. A. Potts), or alcoholic indulgence at the time of impregnation (Langdon Down, Sabatier, Quatrefages, Lucon, Morel, Bourneville, Grenier and Wiglesworth).

Difficulty of establishing scientific conclusions in the field of human transmission. It were rash to affirm that these conclusions, which are anathema to the followers of Weismann, have been established beyond every peradventure of doubt so far as concerns the transmission of human traits. The fact is, so intricate, involved, and complex are the factors affecting the transmission of physical and mental traits in man, and so restricted are the possibilities of isolating and controlling any set of factors, that our knowledge of human heredity still remains largely conjectural. Where there is a complex nexus of possible causative factors, which is constantly found to be the case in tracing the origin of traits in man, it is impossible to determine with mathematical or demonstrable exactness the relative rôle played by each factor, that is, to determine which factor or factors play a primary rôle or merely a secondary or exciting rôle, or no rôle whatever. Because of the complexity of the problem and the impossibility of segregating and controlling the component factors, human heredity has not yet been reduced to an accurate, demonstrable science. Certainly the conclusion that the human germ plasm and embryo are entirely

immune to any pernicious influence from alcohol, or any other incident force, and that the cacogenic effects which have been observed are due solely to a prior "neuropathic taint," the genesis of which is lost in obscure antiquity, cannot be regarded as an indisputable axiom of science. It is at most merely a scientific hypothesis based on observed results which are "scientifically" quite as explicable on the assumption that the germ plasm is subject to modification by virulent agencies when sufficiently intense and long continued, that such modifications can be transmitted to the offspring, and that the immature nervous system of the embryo or young child can be injured by similar destructive substances. This conclusion seems inescapable unless we may arbitrarily conclude that the processes of transmission in human individuals, and in animals and plants are entirely disparate, for the observed results of human toxication have been experimentally produced under controlled conditions on various animals by different experimenters. Space permits merely a brief summary of the controlled animal experiments showing the blastophthoric effects of alcohol and lead poisoning (with a few of the more relevant observations of similar effects of alcoholism and plumbism in man), and the transmissibility of structural modifications produced by environmental stimuli. For brief references to the influence of other forces, including defective nutrition and lack of vitamins, consult *Causative Factors of Mental Inferiority and the Prevention of Degeneracy*.

ALCOHOLIZATION EXPERIMENTS

C. R. Stockard, D. M. Craig, and G. N. Papanicolaou in very elaborate control experiments carried on during the past decade have had young, vigorous, fertile male and female guinea pigs, proved by prior control experiments to be capable of producing normal offspring, inhale the fumes of alcohol from one to three hours a day, six days a week for periods varying from a few months

to five or six years. Normal males were mated with alcoholized females, and vice versa, and alcoholized males with alcoholized females. The alcoholized progeny has been found to be inferior in fourteen or fifteen qualities compared, for example, in size of litter, failure to conceive, early prenatal deaths, late prenatal deaths, total mortality, abnormalities, oversize and average weight at birth, at one month and at three months. Among the deformities and defects produced were absence of one eye, absence of both eyeballs, opaque cornea, opaque lens, cataract and paralysis agitans. No such defects occurred in the non-alcoholized line. In general the greatest injury followed alcoholization of the females. The defects have been transmitted through several generations.

In a recent article Stockard emphasizes that alcohol has a selective action on weaker or unfit germ plasm. There is an excessive elimination of the weaker grandchildren among alcoholized animals, so that eventually the surviving animals produce superior stock. He believes that the nations which have indulged for many generations in the strongest alcoholic beverages are the ones which have outstripped the less alcoholized nations. Commenting on this conclusion, the editor of the *Journal of the American Medical Association* remarks: "Such extreme generalizations in fields where many agencies of man and nature may coöperate or conflict in the course of the centuries can scarcely be claimed to abide within the range of exact science or even fully warranted hypothesis."

The results in the experiment of R. Pearl on the alcoholization of the domestic fowl did not seem to harmonize with Stockard's findings for the guinea pigs. There was no lessening of weight nor increase of mortality in the offspring of two alcoholized parents. Stockard interprets this to mean that there was a considerable amount of early prenatal mortality rather than elimination of more resistant germ cells. Pearl, however, concludes that "the offspring of the alcoholized are as a class indubitably differentiated from the offspring of the nonalcoholics."

I. J. Cole and C. L. Davis mated two males with the same female rabbit, and then had the male with the fertilizing advantage inhale the fumes of alcohol for one month. This male now failed to sire in competition with the other male, but produced offspring again when mated singly. This has been cited as a crucial experiment on the effect of alcohol on the spermatozoa.

Féré subjected incubating eggs to the vapor of alcohol. The result was 63 per cent of normal hatchings, 16 per cent of in-

completely developed embryos, and 21 per cent of monstrosities.

E. Torelle found that small amounts of alcohol added to sea water did not injure the sperm cells of the starfish.

Ivanow immersed the sperms of the dog, rat, rabbit, guinea pig, and sheep in solutions of alcohol, but nevertheless obtained normal offspring. Stockard says that the solutions used (maximum seven per cent) were not strong enough to affect the chemical nature of the sperm cells. Monstrosities resulted when Stockard placed the eggs of fish shortly after fertilization in an alcoholic solution.

Wilson Gee in an experiment with the spermatozoa of fishes found that the difference between an effective alcohol dose and a fatal dose was very slight. With the right dosage abnormal issue resulted.

A. H. Arlitt and H. G. Wells administered alcohol in the food to white rats for two or three months, and almost constantly found marked degeneration in the testicles, while other organs were unaffected. The spermatozoa showed all degrees of abnormality. Finally aspermia and complete sterility supervened. Stockard, using the inhalation method on guinea pigs, reported negative effects on the testes, but the ovaries grew cystic.

A large proportion of stillborn and defective young resulted from the alcoholization during pregnancy of dogs in the experiments of C. F. Hodge and of Pfarrenger, and of rabbits and guinea pigs in the experiment of T. Laitenan.

Nicloux and Renault found alcohol in the human testes and ovaries in the ratio of two to three and three to five as compared with the blood. Lancereaux found that alcohol paralyzed the ova and produced ovarian degeneration. Weichselbaum reports that thirty-seven of thirty-nine chronic alcoholics showed testicular degeneration. Simonds found azoospermia in 60 per cent of autopsied alcoholics.

Lonnett states that 107 English women dying of alcoholism before the age of twenty-nine bore twenty-nine vigorous children before they became alcoholic, but after they became alcoholic only six children, all delicate or deformed.

R. J. Paris reports that the children born to thirteen women before they became inebriate were normal, while those born after the onset of inebriety were "weak minded."

C. C. Sullivan obtained the records of 600 offspring of 120 female inebriates free from tuberculosis, syphilis, or nervousness. 55.8 per cent of the progeny were stillborn or died before the age of two.

The mortality was two and a half times greater than for infants of sober mothers.

One observer found 6.2 per cent of stillbirths among the first births and 17.2 per cent among the last born of maternal inebriates. Another writer reports 33.7 per cent of infant deaths among the first born, and 72 per cent among the sixth to the tenth born of female inebriates.

Laitenan secured records on 20,000 children in Denmark. The percentage of miscarriages was 1.07 among total abstainers, 5.26 per cent among moderate drinkers, and 7.11 per cent among heavy drinkers. The infants of the drinkers averaged less in weight than those of moderates, and the children of moderates less than those of teetotalers (based on monthly weighings up to the eighth month). Information was not given as to whether the mothers, fathers, or both parents were alcoholic. An increase in national sobriety was attended by a decrease in infant mortality. Henri Schmidt states that during the period from 1874 to 1904 the stillbirths from each 1000 conceptions in France amounted to 5.36 per cent for certain absinthe districts (southern part), 4.48 for certain alcoholic districts, but only 3.62 for certain non-alcoholic districts.

LEAD POISONING

I. J. Cole and L. J. Bachhuber ingested lead acetate into the alimentary canal of male rabbits and fowl. The offspring from the rabbits rated less in weight and higher in mortality than the normal. The eggs of the poisoned cocks developed less frequently than those fertilized by normal males, while the mortality was higher both before and after hatching.

C. V. Weller fed commercial white lead in gelatine capsules to male guinea pigs and mated them with normal females. Care was taken not to overdose, and no impairment of the digestion was observed. The average litter for 32 control matings was 1.8, for 34 matings of lead poisoned males with normal females, 1.9, and for 27 matings of lead females with normal males, 1.7. The effect of chronic poisoning on the male germ plasma was the production of sterility in some cases, a 20 per cent loss of weight at birth and permanent underweight, and a higher mortality rate during the first week.

Rennert records frequent abortions, deaf-mutes, and macrocephalics in mothers employed in pottery works in Germany.

When both parents have been working in lead the evils of lead effect the fetus and the continuance of pregnancy 94 times out of 100, when the mother alone has been affected 92 times, and when the father alone has been affected 63 times. It has been shown that lead may pass from the mother's blood to the fetus and from the mother's milk to the child. Similar observations on the effects of plumbism have been made by Ballard, Lewin, and Bourneville. Abortions have sometimes continued after discontinuance of work in lead, probably due to the presence of the lead or the effects of the lead in the mothers.

Constatin Paul studied (in 1860) the effects of lead poisoning on human fathers, and reported 12 stillbirths or abortions out of 32 pregnancies, and eight deaths during the first year, four during the second year, five during the third, and one later in childhood. Only two children survived the first three years.

Roques and Thomas Oliver have reported epilepsy, imbecility, and idiocy as effects of parental lead poisoning, the effects being worse when both parents are affected, and worse when the mother is affected as compared with the father.

TRANSMISSION OF MODIFICATIONS PRODUCED BY COLOR, TEMPERATURE AND MOISTURE CHANGES IN THE ENVIRONMENT, BY MUTILATIONS, AND BY THE INJECTION OF ANTIBODIES INTO THE BLOOD STREAM

Paul Kammerer showed experimentally that when the pregnant *Salamandra maculosa*, which is oviparous, inhabits the lowlands, and produces from thirty to forty gullied yellow and black offspring, was kept in dry surroundings, the first offspring would perish unless placed in water. At the fourth pregnancy, however, the offspring were born as fully developed land salamanders, possessing lungs and limbs. In other words, the *Salamandra maculosa* had assumed the breathing habits of the *Salamandra atra*, which is black, lives at high altitudes, is viviparous, and produces only two young, which are land animals from the time of birth. It was further discovered that these habits were transmitted to the succeeding generations.

Kammerer also found that it was possible to convert the striped form of *Salamandra maculosa* into the asymmetrically spotted form, and vice versa, by keeping the young upon black or yellow backgrounds, and that the converted forms bred true. However, if a naturally striped individual was crossed with a spotted individual,

all the offspring were spotted, the latter of which when inbred produce a progeny in which, on the average, one out of four was striped. When, however, an artificially striped individual was crossed with a spotted one, all the offspring were intermediate in pattern, having symmetrical rows of spots. The conclusion was reached that a "new" (acquired) characteristic may stimulate, irritate, or influence the germ plasm, while an "old" (inherited) characteristic is incapable of so doing.

In a parallel experiment, Kammerer grew eyes in the sightless proteus (whose eyes have atrophied to mere rudimentary spots beneath the skin through ages of living in deep marine caves) by exposing the newts to red lights in their watery home continuously for five years from birth. After several generations a group was born with eyes, the offspring of these also being born with eyes.

In what he regards as his experimentum crucis, Kammerer found that the two siphons of the *Ciona intestinalis* (which serve for inhalation and exhalation) when repeatedly amputated grew excessively long, and that the offspring of such amputated individuals possessed greatly elongated siphons. When the posterior organs (consisting of a coiled intestine containing the genitalia at the rear end of the inhalent tube) were removed from individuals with artificially produced long siphons, the remaining portion of the body built up the complete posterior part, including the genital organs. The progeny of such individuals also possessed very long siphons. From this experiment the conclusion was drawn, not only that the soma is capable of producing new germ-plasm, but that this germ-plasm may carry a tendency toward local growth derived from the experience of the individual instead of merely from some ancestral rudiment transmitted from the primeval past, and that these principles of transmission underlie the life processes of the higher animals and of man.

Observations of human parental alcoholism, imperfect as they are, and animal experimentation thus seem to offer little escape from the conclusion that alcohol is a subtle, insidious race poison which may affect the germ plasm and the embryo, which may impair the more resistant progeny, and which may exterminate the less viable and robust. But this conclusion does not justify the inference that

alcoholic indulgence invariably injures the germ plasm or the fetus. It is conceded that this is not the case. Normal offspring and geniuses have been produced by inebriates. Even those who are not prepared to accept the above conclusions will admit that alcohol exerts a peculiarly demoralizing influence on the defective or deficient members of society who are addicted to its use.

V. It is alleged that the feeble-minded are highly inclined to lead lives of immorality or prostitution

Investigation of personal and family histories and of "strains of degenerates" shows that a considerable number of the mentally defective have at some time been sex offenders. Some go so far as to assert that all voluntary prostitutes are mentally defective. Indeed examinations of groups of street solicitors and inmates of brothels, girls' reformatories, or other institutions maintained for sex offenders have sometimes yielded from eighty-five to one hundred per cent of mental defectives. Such diagnoses have usually been predicated on the fact of social delinquency plus the possession of an intelligence level of twelve years or less, the vast majority of such defectives having been classed as "middle or high grade morons." While such estimates represent gross exaggerations, it is probably true that female sex offenders of the professional class yield a larger percentage of mental defectives than any other criminal class, — due, as previously intimated, less to inherent erotomania, libidinousness or oversexuality than to lack of judgment or ability to resist temptation, to hypercredulity, reluctance to work, economic pressure, and victimization by the white slave traffickers and pimps. Probably only from fifteen to twenty-five per cent of the general run of such offenders are feeble-minded on the basis of a standard of mental deficiency which can be validated for the non-immoral type of inferior

person. Most of these mentally defective unfortunates could be saved from a career of social delinquency by the adequate organization of preventive and protective safeguards. Such protective work would reduce the problem of social delinquency by a considerable amount. But there is no justification for the assumption that the segregation of the feeble-minded will wholly eliminate the problem of sexual misconduct. Feeble-mindedness is not the tap-root of sex irregularities. It is merely an important feeder.

VI. Feeble-mindedness is a prime source of destitution, pauperism and vagrancy

This relationship is self-evident if the diagnosis has been based on the accepted social criteria of feeble-mindedness. The root implication of feeble-mindedness is socio-industrial incompetency due to inherited or early-acquired defect of intelligence. The feeble-minded by definition are those who cannot maintain themselves independently in society. Many are, in point of fact, destitute because of inadequate support. Sometimes the parents are unwilling to render proper aid and supervision, sometimes they are morally or economically incapable of so doing, and sometimes they have died and the friends or guardians are negligent. For these reasons many mental defectives are driven to the wall. Face to face with starvation and poverty, they may become mendicants, vagrants, impostors, panderers, incendiarists, thieves, and even murderers.

Statistical data. Of 8813 aments from eleven representative areas of England and Wales, reported by the British Royal Commission on the Care and Control of the Feeble-Minded, 40.5 per cent were in workhouses, training, rescue, or inebriate homes, prisons, or asylums, or were receiving outdoor relief. Exclusive of the children in school, and idiots, and imbeciles, the percentage was 67.8 per cent. Two

fifths of all the "feeble-minded" (high grade) adults were in the "poor-law institutions," more than half being less than forty-five years of age. In the Manchester institution less than one fourth of the feeble-minded, as against the "vast proportion" of the normal minded inmates, were over fifty years of age. In the urban and industrial areas, 79 per cent of the "feeble-minded" were in institutions or were receiving outdoor relief, but only 46.4 per cent of those from rural areas.

Tredgold estimates that about 18 per cent of the workhouse inmates in England are feeble-minded.

In the census of the feeble-minded made in Philadelphia in 1910, three fourths were found to be "paupers" supported by the charitable agencies, almshouses, and institutions for the feeble-minded and insane.

Of 105 admitted to the Chester County (Pennsylvania) almshouse, 100 were adjudged feeble-minded, while 75 per cent were so classified in the special survey made of inmates in Virginia almshouses. Many of these, undoubtedly, were demented, illiterates, and "borderliners" rather than mental defectives. Of inmates studied in the Indiana infirmaries, 26.9 per cent were classed as feeble-minded and 16.1 per cent as insane and epileptic, while 37 per cent of 109 inmates in Missouri county infirmaries gave "evidence of mental defectiveness."

Possible evils attaching to the poorhouse system of care. Frequently the inmates are allowed to lead lives of idleness because the homes afford insufficient opportunities for wholesome or remunerative employment. Sometimes in small county institutions vice flourishes because of lax supervision or inability to segregate the sexes. Frequently the homes become, in effect, maternity homes or lying-in-hospitals, to which unfortunate girls repair when in trouble, and where, frequently, they remain only so long as necessary, for mental deficiency or immorality usually do not con-

stitute grounds for mandatory retention in poorhouses. Some girls make frequent trips to the infirmaries on the same mission before they are properly restrained by the agencies of society. Often these women are sinned against by normal men of the community, not infrequently by members of the households in which they are employed. In one almshouse in New Jersey eight women came for maternity care within a period of six weeks of each other. The superintendent of one county infirmary reported that 105 children had been born in the home during a period of five years, of whom he regarded 102 as feeble-minded (obviously a grossly exaggerated estimate of mental deficiency). Sixty-one of 165 destitute women (apparently regarded as feeble-minded) in an English almshouse had borne 158 children, of whom 21 were classed as feeble-minded, 22 decidedly subnormal and delicate, and 19 apparently normal, while 96 were dead or missing. It is reported from the workhouse at Stoke-on-Trent that 42 destitute feeble-minded women had borne 78 illegitimate children. Eighteen of 58 feeble-minded women found in the Wiltshire workhouse had illegitimate progeny. In the Somersetshire workhouse, 61 of 167 ("all the feeble-minded in the area") had children, two thirds being illegitimate. These homes were in rural sections. In 1889, 366 "weak minded" women who had been leading immoral lives came to 56 workhouses in England. Thirty-three per cent of 14,725 women in the Magdalene Homes in England in 1902 to 1904 (16 per cent of whom were reported to be feeble-minded), had borne one or more children out of wedlock.

But these highly discouraging statistics probably are not typical of the total distribution of the feeble-minded. At any rate, the reported data are not free from discrepancies. According to J. L. A. Koch, not over 2 per cent of "idiots" in Wurtemberg were born out of wedlock, which was less than the ratio for the whole population. According to J. Carlsen

only 5 per cent of "idiots" and 5.4 per cent of "deaf mutes" were born out of wedlock in Denmark as compared with 10 per cent of all births. Ireland holds that "imbecility is scarcer among natural than among legitimate children," while Lapage holds that there is more feeble-mindedness among the former class because the mothers are frequently feeble-minded. Goddard concludes that "there is a decided relation between illegitimacy and hereditary feeble-mindedness." He found 2.4 per cent of illegitimates among the 11,389 persons traced in the investigation already cited, of whom 93 per cent were among those classed in the "pure hereditary group." The notorious cases of immorality constituted 2.5 per cent of all the persons charted and 3.7 per cent of those in the hereditary group. They were over eight times as numerous in this group as in the other four groups. Fifty-nine per cent of these cases were classed as feeble-minded and 5.2 per cent as normal. The percentage of immorality reported among the parents of my 872 clinic cases amounted to 2.8 per cent, the incidence being 72 per cent greater among the parents of the feeble-minded than among the parents of the normal, retarded, and backward children. Undoubtedly the recorded data in all studies are imperfect. Many mental defectives born in wedlock are not reported, while many born out of wedlock perish from neglect or violence.

Wanderlust or nomadism among the mentally defective. Many mental defectives have the propensity to rove about periodically or habitually from place to place. Even some with good homes are apparently impelled by the "migratory instinct" to lead a nomadic existence. Some without homes, when forced to shift for themselves, roam the countryside looking for odd jobs or hand-outs, for the most part "sponging" on the hospitality of others. They constitute a class of restless, shiftless vagrants or itinerant job- or bounty-hunters

who are, in the main, harmless ne'er-do-wells. The British Royal Commission estimated that about ten per cent of the feeble-minded were vagrants, and that about ten per cent of all the vagrants were feeble-minded, most of whom were well-behaved and inoffensive, while a few were criminalistically inclined. G. R. Johnson classified as "high-grade morons" twenty-one per cent of 107 dissipating, unemployed non-foreigners selected at random from the unemployed during an unemployment season in Portland, Oregon. However, while all of these men except three measured less than twelve years in intelligence by the Stanford-Binet, only a few fell below the ten-year level.

Summary. The conclusion enforced by this brief survey is that the existence of the class of the feeble-minded is of vital concern to society because of the possible social menace of feeble-minded persons when left at large without proper support and supervision — and the vast majority are found in the body politic. The grown feeble-minded, while remaining mere children in judgment, intellect, understanding, sense of responsibility, and self-control, have the bodies, and often the emotions, instincts, and passions of adults. They become anti-social primarily because of mental, moral, educational, and industrial incompetency, because of lack of proper support and control when at large, and because they are duped, deceived, bullied, mistreated, and preyed upon by the human sharks of the community who are of more normal intelligence. While they cannot be cured of their mental deficiency and frequently cannot be reformed by the ordinary processes of reformation — arrest, conviction, fine, imprisonment and release — the burden and criminal menace of the feeble-minded can be considerably reduced by the adoption of an adequate, constructive, State and national program of eugenics, euthenics, and orthogenics. Two basic aspects of the program of prevention will be considered in the final chapter.

CHAPTER XII

ULTIMATE AIMS OF CONSTRUCTIVE WORK IN THE FIELD OF MENTAL DEFICIENCY

I. Prevention and elimination rather than cure

A problem of prevention rather than cure. Since mental deficiency in the vast majority of cases is not an active disease or disability which can be cured by medication, surgical interference, exercise, improved nutrition, glandular therapy, or training, but is a defective nervous and mental condition which is amenable only to amelioration or improvement, particularly through educational processes, the problem resolves itself primarily into the organization of efforts for the prevention, elimination, or extermination of feeble-mindedness. The ultimate objective should be to prevent or eradicate the condition, for the feeble-minded, as we have seen, constitute a racial liability — “so much excess baggage” — and not an asset. The economic and biological integrity of the race would be improved by the elimination of all the feeble-minded, although the presence of the feeble-minded in society may not be an unmixed evil. It may have its compensation in developing the generous, sympathetic and benevolent impulses in man.

Elimination of dullards. Some social economists advocate the elimination not only of the feeble-minded, but also of the borderline and backward grades of incompetents. It is quite improbable, however, that the highest interests of the race would be served by the elimination of grades of inferiors above the status of the feeble-minded. There are all grades and types of essential work to be performed in a complex civilization, including countless simple, routine opera-

tions or tasks which can be satisfactorily performed, indeed possibly most satisfactorily performed, by persons of limited endowment and mediocre educational possibilities. Unless these basic forms of service are adequately carried on, the higher forms of culture will perish or become stagnant. Who would do the necessary menial or routine types of labor if all persons were of superior intelligence, or were equally educable for the "white-collar" occupations? It is notorious that the tendency of higher culture and education is to make people restless and dissatisfied with their lot in life, and to wean them away from work derisively referred to as "labor," toward callings ("soft-snaps") which do not begrime the hands, or soil the raiment, or require "manual labor," and which therefore are thought to be sufficiently "respectable" for an educated lady or gentleman. Were it not for the presence in society of large masses of people of limited educational potentialities, the dangers to the state of overeducation would be as genuine as the dangers of undereducation. There is even now reason for questioning the advisability of raising the compulsory school age to eighteen years for all children. Even the educated mental inferiors tend to despise all but the white-collar jobs. Society as at present organized cannot exist without a large mass of workers who are willing to be "hewers of wood and drawers of water." The mentally inferior classes, if left alone by the propagandists and the misguided agitators of false economic theories, are quite satisfied to do the simple routine, but essentially basic, work of the world because it fits their level of ability. Society's wide diversity of occupational needs will require hosts of workers of a wide distribution of mental levels, or competency levels, until the educated classes are willing to do all types of menial jobs at compensation commensurate with the limited degree of skill and responsibility involved.

Elimination a problem of preventive racial hygiene. The problem of the prevention and elimination of feeble-mindedness is mainly — indeed, exclusively, according to the orthodox view — a problem of eugenics, which Francis Galton, who coined the term, defined as “the science which deals with all the influences that improve the inborn qualities of the race” — the heritable qualities. Negative eugenics aims to prevent the procreation of defectives or degenerates, while positive eugenics aims to promote the birth of healthy, well-endowed, superior individuals.

Proposed methods of extermination and elimination. The discussion will be confined to a brief consideration of six methods of elimination which have been advocated and practiced in a desultory manner from time to time.

1. *Prevention of injury to the germ plasm or the immature nervous system of the embryo or of the young child by toxic or other destructive substances.* Controlled animal experiments, such as referred to in the previous chapter, suggest that eugenic or euthenic results may be obtained from the processes of human detoxication, that is, the elimination from the human system of poisonous substances. C. R. Redfield has presented challenging facts in support of his theory that positive eugenic results may even be obtained from continued exercise. To quote from a personal letter: “It is a fundamental characteristic of protoplasm in all of its forms” “that powers are developed by exercise and lost by idleness.” “There is no known limit to the extent to which powers may be developed by continually exercising them.” “There are sticking points of varying sizes at irregular intervals in any continuous development,” but all of these “may be overcome by exercise.” “I deny that there are any powers which cannot be developed by exercise, or that there is any acquired development of that kind which is not inherited.”

2. *Prevention of the marriage of the biologically unfit.*

Many States have enacted laws prohibiting the marriage of the feeble-minded, epileptic, insane, and other types of defectives regarded as unfit for parentage. This measure is excellent in intent, and commendable as an expression of the deliberate will of the state, but it is not very effective in practice. Many unidentified or unrecognized defectives will continue to marry in spite of prohibitory statutes, because of the inadequate machinery for conclusive diagnosis, registration, or certification. Moreover, many children will be born out of wedlock from defectives left at large in society. Recognizing that this is at best only a partial remedy, the emphasis is now being placed on more radical remedies.

3. *Euthanasia, or painless extermination, by means of a fatal anodyne narcotic, such as chloroform.* This is still vigorously advocated as an economical, expeditious, and practicable means of ridding society of defective strains, and as a kindly, painless measure of relief to individuals who would be a burden to themselves and to others, but it is rarely practiced because of sentimental, moral, religious, and scientific objections. It is a waste of effort to advocate euthanasia at the present time. Society will not tolerate the execution of defectives who have not committed a capital offense.

4. *Sterilization or asexualization, or the destruction of the power of procreation by operative procedures.* The agitation for the unsexing of defectives and degenerates (for example, the feeble-minded, insane and epileptics, rapists, confirmed criminals, confirmed drunkards, or drug fiends) has recently received added impetus from the studies of heredity and eugenics, particularly from the type of pedigree investigations of defective and feeble-minded strains which were cited on pages 274 to 280. But sterilization is an ancient practice, although it has not always been carried out for the purpose of preventing the transmission of defective stock.

In Biblical times enforced sterilization was practiced by the Egyptians, Malays, Hebrews (eunuchs), and the inhabitants of Borneo and Java. It has also been practiced by some tribes of Australians and of American Indians. In Scotland, in olden times, males who suffered from insanity, idiocy, epilepsy, leprosy, or transmissible diseases were "gelded," while the females were kept under rigid restrictions. Different religious organizations such as the "Skoptzi," or the "White Doves" among the Russians, have in various ages sanctioned the practice.

Different operative procedures. The following are the corresponding operations performed on the two sexes:

FEMALES	MALES
1. Oophorectomy, or ovariectomy, or removal of ovaries.	Castration, or removal of testes.
2. Curetting or cauterizing the intrauterine tubal openings.	Spermectomy, or ligation and excision of each spermatic cord, including the veins, arteries, nerves, and vas deferens.
3. Fallectomy, or salpingectomy, or removal of a short section of each fallopian tube or oviduct, and the burial of the proximal ends between the folds of the broad ligaments, or the ligation of the ends nearest the uterus, the ovarian end remaining open for the absorption of the ovarian secretion	Vasectomy, or removing a short section of each vas deferens, and ligation of the distal ends, leaving the ends near the testes patulous, to allow the absorption of the testicular secretion.
4. Exposure to Roentgen (X) rays, involving the destruction of the Graafian follicles of the ovaries.	Same, involving the destruction of the epithelial cells lining the tubuli seminiferi of the testes producing azoospermia.

Castration was advocated in America over fifty years ago before the Texas legislature by Gideon Lincecum, but the practice has never won much favor because the method

possesses no eugenical advantages over less radical procedures, and because it produces profound physical and sometimes mental changes when performed on the young. The Roentgen ray treatment is easy to administer, although it requires several applications of the rays, and is painless, but it has not come into extensive use because of doubts as to whether the sterile condition will continue permanently. Practically the only operative procedures now urged are fallocotomy, or salpingectomy, and vasectomy. The latter can be performed in a few minutes, is painless under a local anæsthetic, renders the individual absolutely sterile if successfully performed bilaterally (it is sometimes difficult to discover or to isolate the vas when varicocele exists), and does not, it is alleged, produce any inconvenience or mental or nervous disturbances. The originator of this form of operation seems to have been H. C. Sharp, who began to employ it in October, 1899, in the Jeffersonville, Indiana, Reformatory on various types of degenerates and on cases of onanism, impotency, sexual neurasthenia, hypertrophied prostate, and seminal vesiculitis. Salpingectomy is far more difficult to perform than vasectomy, as it requires a major surgical operation.

Sterilization laws. The States which have at various times enacted sterilization laws are listed in the following tabulation (on page 312), together with the date of enactment, and the status of the legislation at the present time.

It is apparent from this summary that, while nineteen State legislatures have enacted sterilization laws, the statutes are dead letters through vetoes, repeals, court decisions, or non-enforcement in all except five or six States, and only a small number of operations are being performed in these States. According to H. H. Laughlin, who has recently published a comprehensive summary of sterilization legislation in the United States and a discussion of various

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STATE	DATE OF ENACTMENT	PRESENT STATUS
Pennsylvania	1905	Vetoed
	1921	Vetoed
Indiana	1907	Declared unconstitutional but on statutes as dead letter
Oregon	1909	Vetoed
	1913	Not ratified by referendum vote
	1917	Declared unconstitutional but on statutes as dead letter
Washington	1909	
	1921	In abeyance because of litigation
California	1909	
	1913	Functioning to some extent
Connecticut	1909	
	1919	Limited application
New Jersey	1911	Declared unconstitutional but on statutes as dead letter
Iowa	1911	
	1913	Declared unconstitutional and repealed
	1915	Inoperative
New York	1912	Declared unconstitutional in 1918 and repealed in 1920
Vermont	1913	Vetoed
North Dakota	1913	Limited application
Michigan	1913	Declared unconstitutional
	1923	In effect
Kansas	1913	
	1917	Inoperative
Nebraska	1913	Vetoed
	1915	Functioning to some extent
Wisconsin	1913	Limited application
South Dakota	1917	Dead letter
Idaho	1919	Vetoed
Nevada		Declared unconstitutional, but still on statutes as dead letter
Virginia	1924	
Illinois, Minnesota, New Hampshire, and Ohio		Have made unsuccessful efforts to enact laws.

questions relating to eugenical sterilization, only 3233 operations had been carried out under all the above statutes up to January, 1921. Twenty-five hundred and fifty-eight of

these operations were performed in California, most of them on inmates of institutions for the insane. Thus far, the practice has been almost entirely confined, so far as the statutory operations are concerned, to inmates of institutions for the insane, feeble-minded, and criminalistic.

Arguments in favor of asexualization. What are the chief arguments advanced by the proponents of the form of sterilization usually advocated, namely, vasectomy?

(1) It is contended that vasectomy renders the individual less unstable, tempestuous, or erotic, and more tractable and comfortable, sunnier in disposition, physically healthier and more vigorous, and brighter in intellect. Sharp, reporting on 236 cases, says that he noted nothing but favorable results. Even when the operation occurred before puberty, there was no interference with normal bodily development. Many "high-grade defectives" in the Reformatory, recognizing their bondage to animal passions, voluntarily asked for the remedy, after observing the good results of vasectomy on their mates. According to the report of another writer, only five per cent of 106 vasectomized criminals were recommitted.

The Steinach operation. It is claimed that in the Steinach form of operation, in which the vas deferens is resected so as to prevent reunion, and both ends ligated (tied) with a non-absorbable material, the interstitial tissue and cells of Leydig in the "puberty gland" (which is ductless and secretes into the blood) proliferate and develop in place of the cells of the generative portion of the testes (which accordingly atrophy). These interstitial cells increase the production of gonadal hormones, which stimulate the whole endocrine system, thereby improving physical and mental health, lowering the blood pressure, increasing bodily weight, improving memory (and sometimes eyesight), stimulating or renewing ambition, increasing libido, and sometimes, although rarely, causing actual "rejuvenation."

(2) It is easily performed, painless, and without danger; hence it is humane. Fallectomy, as already remarked, requires a major operation.

(3) It is economical, expeditious, and certain. It is an effective and inexpensive form of preventing procreation, if properly performed, while some of the other methods are very expensive or uncertain. It has been claimed for this remedy that it would depopulate the institutions for mental defectives in a third of a century. This expectation of hyperenthusiastic eugenists is quite too optimistic, however efficacious the remedy may prove to be.

(4) After having been trained in institutions to support themselves, wholly or in part, many individuals could be released without eugenic menace, which would relieve the overcrowded institutions and lessen the burden of care. However, vasectomy would not necessarily guarantee that the individuals thus released would not subsequently become immoral, criminalistic, or dependent.

(5) The State possesses the moral and legal right to interfere with the individual's desires, prerogatives, and practices when they are anti-social or dysgenic in tendency. The State now interferes with adulteration of foods and the manufacture and sale of alcoholics, with boycotts, unregulated divorce, free love, social immorality, and homicide. In fact, in the case of homicide it exercises the right to inflict capital punishment. It is argued that the greater right, namely, the deprivation of life under legal sanction, involves the lesser right, namely, the right to prevent the procreation of defective, degenerate, or cacogenic progeny.

Arguments against sterilization. The case against sterilization may be summed up as follows:

(1) *Sentimental scruples.* The thought is repugnant. It shocks the sensibilities.

(2) *Moral and religious objections.* It is inhuman. We

have no right to interfere with a sacred function or an inalienable right, namely, the right to parenthood. Nature herself, however, does not seem to regard the function as inviolable or holy. She habitually sterilizes without compunction those who will not live within the moral law and who become victims to venereal infection.

(3) *Legal objections.* Legislation providing mandatory sterilization is illegal or unconstitutional. It violates the essentials of the Bill of Rights, section one, article fourteen of the Amendments to the Constitution, which guarantees the equal protection of the laws to all persons. It is discriminating and thus constitutes class legislation. It is incompatible with the doctrine of "individual rights," since it interferes with the "personal liberty" of the individual. It is a cruel and unjust punishment or a punishment which has been added over and above that ordered by the court.

There is ground for these objections, as indicated by the numerous vetoes and court decisions. Many bills have been defectively drawn, depriving the individual of the right of "due process of law" (that is, the decision of a jury after the consideration of the evidence, which is required in the case of serious infringement), discriminating between defectives in institutions and those at large, thus constituting "class legislation," and enforcing the act as a punitive measure. In order to be legally drawn, the acts must make it appear that the operation is not inflicted as a punishment, but is for the purpose of remedial treatment with a view to enhancing the welfare of the individual and the good of society. There must be no discrimination between individuals of a given "cacogenic group," or attempt to deprive the individual of a judicial hearing on demand. However, it should be remembered that the Constitution does not vouchsafe unlimited personal freedom to any citizen. It is, on the other hand, the constitutional right of society to abridge the

individual's "personal liberty" and "individual rights" when they interfere with the rights of others or endanger the welfare of the state.

(4) *Scientific doubts.* It is contended that we are unable to make approximately accurate, leave alone infallible, diagnoses of eugenic unfitness, or to frame a satisfactory definition of the condition, or predict with sufficient accuracy whether a union between two given persons will produce dysgenic, defective progeny. H. H. Laughlin has recently proposed legal definitions for "a socially inadequate person," the "socially inadequate classes," "a potential parent of socially inadequate offspring," and a "cacogenic person." He has published formulas which all but convey the impression that the ratio of eugenic and cacogenic offspring resulting from any union can be figured out with utmost mathematical precision, once the pedigree charts have been worked up by the eugenical field worker. But it is unlikely in our present stage of knowledge that these proposed definitions will be widely accepted either by lawmakers or by scientists. Under Laughlin's model law, "all persons in the State who, because of degenerate or defective hereditary qualities, are potential parents of socially inadequate offspring," would be sterilized. "Social inadequacy" is predicated on the basis of various social, psychological, and physical handicaps, the socially inadequate classes including such varied groups as the feeble-minded, insane (including the psychopathic), epileptic, criminalistic, diseased (for example, the tuberculous, syphilitic, and leprous), inebriate and drug habitués, blind and visually handicapped, deaf and very hard of hearing, deformed (including the crippled), and the dependent (including orphans), the homeless, ne'er-do-wells, tramps, and paupers. It is not likely that laws can be enacted and enforced which aim to prevent procreation by "potential parents of socially inadequate offspring," when these laws

are applied to all of these groups of persons, many of whom could be diagnosed as biologically inadequate only on the basis of social standards which, according to the orthodox eugenicist, have been bequeathed by "social heredity" and not by biological heredity, and therefore, according to their views, do not represent transmissible qualities. Moreover, the definition of a "potential parent of socially inadequate offspring" is not only long and involved, but predicates a degree of precision which no one now possesses, so far as concerns the alleged cacogenic triad par excellence of degeneracy, namely, feeble-mindedness, insanity, and epilepsy. We quote, for the purpose of illustration, only the first part of the definition.

A potential parent of socially inadequate offspring is a person who, regardless of his or her own physical, physiological or psychological personality, and of the nature of the germ plasm of such person's co-parent, is a potential parent at least one-fourth of whose possible offspring, because of a certain inheritance from said parent of one or more inferior or degenerate physical, physiological or psychological qualities, would, on the average, according to the demonstrated laws of heredity, most probably function as socially inadequate persons.

So far as concerns the feeble-minded, it can be predicated with confidence that a body of assured knowledge does not now exist which will make it possible to identify with scientific accuracy two postulated groups, namely, the so-called "carriers" who, while themselves normal mentally, only transmit defectiveness; and the group of defectives who are of the non-hereditary type and do not transmit defectiveness, and hence are rated as "eugenically fit." We are far from being able to specify all the conditions under which unions between the feeble-minded do or do not produce defective offspring, or the conditions under which unions between apparently normal persons will issue in defective stock.

According to the Mendelian theory, the offspring of a feeble-minded woman and a normal man would be mentally normal but simplex normal (that is, half of their germ cells would be defective). If such simplex normals married into normal strains there would be little eugenic danger, but if they married into defective strains some of the offspring would be defective. This is all very simple in theory. In practice, it cannot always be determined whether the condition is simplex or duplex. Indeed there is no incontrovertible proof that the Mendelian formula has any application at all to the mode of transmitting mental defectiveness.

There is a second scientific objection of equal moment. What shall be our diagnostic standard of feeble-mindedness for the purpose of eugenic sterilization? Where shall we draw the line? Shall we regard as bona fide "cacogenic" cases of feeble-mindedness all older adolescents or adults who do not possess an "intelligence level" by verbal tests of over twelve years, or over eleven years, or over ten years? Or an I.Q. of less than 70, or less than 65, or less than 60? It has already been shown what a tremendous number of persons would be feeble-minded under standards widely followed in the past.

While these objections are well-grounded, it may be emphasized that the feeble-minded — at least those who are clearly feeble-minded — should not be permitted to reproduce themselves quite irrespective of eugenic considerations, for the feeble-minded do not make fit parents or bread winners. They are unable properly to rear children, or to manage or support homes. Sterilization would at least be a beneficent operation for all who are clearly feeble-minded.

On the other hand, the attempt to prevent procreation by potential parents of the borderline and backward or dull-normal grades of inferiors would in all probability prove disastrous, because of the multitude of people in these groups,

and because these subaverage persons are fitted to do essential types of low-grade or routine work which the more highly endowed disdain and refuse to do.

(5) *Doubts regarding the ultimate after-effects on the individual.* We do not yet know, so it is alleged, what the effects will be after a long term of years, on the individual's physical, mental, and moral well-being. However, the evidence so far available does not show that any mental or physical injury has resulted from vasectomy. On the contrary, the results reported have been uniformly favorable.

(6) *Uncertainty regarding the ultimate effects on the moral and biological integrity of the race.* It is feared that vasectomy (or fallocotomy) may encourage sexual promiscuity. Since it removes the possibility of paternity without obliterating desire, it will not only not serve as a deterrent to immoral living, but will tend to further dissolute living and the widespread dissemination of venereal infection. It is held that the fear and shame of illicit parentage serves as the mightiest bulwark of female chastity. Although it is to be doubted that this fear serves to any considerable extent to check licentiousness, both because the natural consequences of illicit relations can be prevented, and because little thought is given to such consequences by "cacogenic" transgressors, nevertheless it is probable that this objection constitutes the strongest practical argument against the widespread employment of vasectomy.

In spite of its great merits, society is not yet ready for the practice of sterilization on any effective scale. It is therefore scarcely worth while to go to the trouble of engineering a strenuous State or national campaign for the enactment of sterilization laws. Even if enacted, there is little likelihood that they will be enforced. Until public sentiment undergoes a radical change, the practice will have to be confined to voluntary applicants.

(5). *The Practice of birth-control.* It is contended that procreation can be just as effectively and less objectionably prevented by the employment of harmless contraceptives as by the use of the method of sterilization. It is argued that this method, which now flourishes very extensively among the higher social classes, should be made accessible to, and even enforced among, the lower social groups, where its practice would be of eugenic value. It is pointed out that birth-control as practiced at present is distinctly dysgenic, because its employment is almost entirely restricted to the better social and biological strains. It is possible that the active propaganda waged at present by two militant national organizations for the removal from the Federal statutes of the ban on the dissemination of the necessary information, may overcome some of the objections vigorously urged against the practice of birth-regulation. Certainly voluntary birth-control is greatly to be preferred to voluntary abortion, which in essence is deliberate murder, and which flourishes throughout the country to an extent little suspected by the uninformed. Nevertheless, this method would be more or less uncertain among the irresponsible and indifferent.

(6). *Segregation or colonization.* This involves the sequestration of male and female mental defectives, especially females of child-bearing age, in separate cottages or divisions of institutions or colonies, and keeping them under constant surveillance, at least during the reproductive period.

Arguments for segregation. The following are the chief arguments in favor of this form of control:

(1) It will eventually result in the effective prevention of degenerate parenthood. While this hope is overoptimistic, colonization undoubtedly would prove about as effective as sterilization, when practiced on the same scale.

(2) The feeble-minded need to be institutionalized irre-

spective of eugenic considerations, because, being industrially incompetent, they are an economic charge upon the community, while many if left at large, will become shiftless mendicants, or vicious or guileless offenders because of inadequate support and control. In the institutions, on the other hand, their physical, educational, and social requirements can be adequately met, and their energies can be diverted into profitable economic and social channels.

There is considerable force to this argument if the diagnoses have been carefully made. However, the great success latterly attained in the paroling of inmates from state institutions for the feeble-minded proves either that the persons concerned were not feeble-minded or that the higher grades of the feeble-minded of the stable type can subsist in society and lead inoffensive lives, particularly when given a modicum of kindly supervision.

(3) There are far less objections against this mode of control than against euthanasia, sterilization, and birth control.

Arguments against colonization. But there are objections and limitations even to this mode of control. The following are among the most serious objections:

(1) We lack mandatory laws for the enforced commitment and permanent detention of mental defectives in public or private institutions. Very few States now have such laws. Parental ties, which are often very strong between parents and their defective offspring, will serve as an effective bar to wholesale compulsory commitment. Even were the requisite legislation enacted, no court would in the long run be able ruthlessly to remove inoffensive defective children or adults from homes of refinement, wealth, or influence which are affording them proper nurture, care and protection. The application of the laws would necessarily have to be limited to defectives who are improperly controlled, protected, or supported, or who display criminal propensities in spite of good care.

(2) The colonization of large numbers of mental defectives would impose an intolerable financial burden on the state. The tendency would be to commit many persons who might otherwise remain in society in order to prevent the contamination of the race by the reproduction of base stocks. Even now fully a quarter of the state revenues are frequently appropriated for the support of institutions for dependents and defectives. However, it must not be forgotten that the money thus spent often represents an equivalent saving in expenditures for crime suppression and poor relief, while the financial burden can be lessened by strictly restricting the admissions to feeble-minded individuals who constitute a criminal or eugenic menace because of inadequate guardianship when left at large. This is not done at present. Most of the institutions for the feeble-minded now contain many inoffensive individuals who are not even feeble-minded.

(3) The inmates escape from the institutions or elude their attendants. But nearly all those who escape are quickly apprehended, and effective segregation of the sexes can be maintained in the institutions by adequate oversight.

(4) Lifelong confinement in an institution would suppress individuality and initiative, transform the inmates into unthinking mechanical automatons, produce neurotic disorders, solitary vice, erotomania, and suppressed mental complexes from sexual repressions and strains. But this picture is doubtless exaggerated so far as concerns the majority of the inmates. Even if it were true, however, these difficulties of adjustment would be preferable to the evils incident to allowing mental defectives to enjoy unrestricted freedom in society.

In spite of all its hampering limitations, segregation is probably the most feasible and the least objectionable means at present available for attempting to check the increase of defective stocks. Eventually the prevention of injury to

the germ plasm and to the immature nervous system, particularly in the embryonic and fetal stage, by the protection of the organism from the destructive influence of incident blastophthoric and other deleterious environmental forces may attain equal, or even greater, importance.

II. Proper and humane support, control, and training of the feeble-minded already in existence

Since society regards the elimination of the feeble-minded by violent, albeit painless, means as intolerable, it cannot shirk the sacred obligation of providing the best support, nurture, supervision, and care for the feeble-minded already born into the world. These unfortunates are in no wise responsible for their condition, and society is not justified in permitting them to be exploited for the benefit of its more fortunate members.

A measurably adequate program of "euthenic" care must involve at least the following elements:

(1) The identification or registration of the feeble-minded. It is doubtful whether a universal system of registration is feasible or even desirable, in the United States. England, of all countries as shown on pages 23f. and 35, comes the nearest to having a universal system of registration. A measurably satisfactory system for the United States need include only the feeble-minded who are delinquent and who give evidence of becoming a social, moral, or economic burden.

(2) Adequate hygiene and medical care and supervision from the time of birth.

(3) Proper corrective and developmental training. This should be given in the public schools, except in the case of mental defectives who are viciously incorrigible or aggressively criminalistic, or who do not receive proper support, protection, or control at home, either because the parents

are intellectually or morally irresponsible, or financially impoverished, or, although willing, are unable for other reasons to provide proper care. The care of a low grade child constitutes a heavy burden on the mother, often monopolizing most of her time. Children who need guardianship under public auspices should be trained in well-organized schools in State, or municipal, or private residential institutions and colonies. All mentally defective children who will require institutional care after finishing the training provided by the public schools, or after reaching the compulsory age limit, should also be sent to these institutions for further training or employment. Mental defectives remaining at large in society should be given such aid, supervision, and support as the circumstances of each case may require.

Essential requirements of a modern residential institution and colony for defectives. Family life in a good home is the ideal condition to be sought, and not institutional life. The institutional régime tends to "institutionalize," to suppress initiative, spontaneity, ingenuity, and originality, and to develop stereotyped behavior, automatisms, and mechanical subservience as already emphasized on an earlier page. An institution is not the place in which to prepare children for extra-institutional living. Orphaned, abandoned, or neglected children who are normal should be placed in good homes whenever possible rather than in institutions. Since, however, there are unmanageable or defective children who require institutional control and must live their lives in institutions, society must insist that the institutions be organized and conducted wholly with a view to the advancement of the highest interests of the inmates, and with a view to minimizing all the detrimental influences necessarily attaching to the regimen of institutional life. This is the supreme test of the satisfactoriness of an institution. The institutions exist for the welfare of the inmates and not for

the convenience, comfort, or personal aggrandizement of the officers or employers. The sole purpose of the institutions is to make the inmates happy, contented, upright, efficient, and useful members of the institutional community (or the communities in which they may later live), and to protect the extra-institutional communities from the evil consequences of the ignorance, vice, incompetency, or criminality of those who must, unfortunately, become wards of the State. Every inmate of an institution is entitled to all the liberties and privileges consistent with his own well-being and the well-being of the other inmates. So far as possible, all must be taught self-control, and due respect for the decencies and proprieties of life and for the rights of their fellows, while they must also be trained to become industrious and useful, but they must not be exploited or abused, and errors and infractions of rules must be dealt with humanely. The disfavor in which institutions have often been held, is largely due to the abuses and barbarities which have from time to time been allowed to creep into the management. The institutions are, however, better conducted to-day than was the case in former years.

In order to fulfill the basic requirement laid down above, the following minor conditions should be observed in the organization and conduct of an institution for mental defectives:

1. The institutional life should be made as homelike as possible. We should recognize the strength of the family instinct, cultivate it, and utilize it. The construction of the institution on the cottage plan will prove an aid in attaining this objective, especially if the cottages are small and are presided over by a sympathetic "house father" and "house mother."

2. The institution should be organized as a miniature community or village, with its homes or cottages for the

inmates, residences for the officers, store, hospital, school, shops, factories, laundry, assembly hall or chapel, administration building, recreation grounds or parks, gardens, and adjoining farms, barns, and garages. Small farm and industrial colonies for trained males and females, organized with the view of becoming wholly or largely self-supporting, should be established on purchased or rented property in various sections of the district served by the central institution.

3. The institution activities should be organized into various divisions or departments, including:

(1) A custodial department which should provide care in segregated cottages for the helpless or semi-infirm.

(2) A training or educational department, which should provide the necessary kindergarten, sensori-motor, academic, physical, hygienic, recreational, musical, industrial, and shop training, which should be closely affiliated with the occupational department, and which should cooperate in the development of the social activities of the institution. The institutional school possesses unparalleled opportunities for adapting the training to the peculiar needs of the children. In the institutions the habits and preferences of the children can be closely studied, while the children can be "tried out" in the great variety of occupational pursuits which are afforded in the cottages, shops, and farms of a modern colony. The institutions possess a very great advantage in being able to offer employment fitting all levels of competency. The school departments of many institutions, however, do not meet the best public school standards with respect to the qualifications of the teachers, or the school equipment.

(3) An employment department, which, as already indicated, should aim to place each inmate in the type of work for which he is the best suited, physically, mentally, temperamentally and vocationally, and which should aim to

apportion the labor of the institution among all the inmates who can be of any service, so that all may share in the advantages of wholesome, profitable employment.

(4) A medical department which should provide the necessary medical, surgical, and dental care, and the general supervision of the health habits of the inmates, with respect to food, clothing, exercise, bathing, and sleep.

(5) A psychological department. If such a department cannot be established, one or more of the teachers should be trained to administer a few psychological tests, particularly the individual tests of "intelligence" and a few standardized achievement tests. The results of such tests should be used to supplement data gathered from other lines of inquiry.

(6) Assemblies, including entertainments, band concerts, plays, movies, theatrical performances, celebrations, birthday parties, exhibitions, and religious exercises should be systematically planned for appropriate occasions throughout the year.

(7) An administrative department which must coördinate all the activities of the institution, and aim to make the institution, so far as possible, self-supporting. If the productive activities of various State institutions are properly organized and coördinated, the institutions will be able to support themselves in large measure by the products of the labor of the inmates, with decided benefit to the inmates themselves.

(8) A research department. It is not possible, nor essential, to organize a separate department of research in every institution. All the departments can carry on investigations of value if proper care is taken in the collection, recording, tabulation, and statistical compilation of the data. The prosecution of profitable research is one of the highest functions of any public institution, as the facts discovered will eventually contribute to the benefit of society in general.

One of the important duties of all departments at all times should be to report to the administrative authority the names of all inmates who appear not to be feeble-minded, or to be deserving of discharge or parole. To achieve the highest measure of success, the placement and parole work should be placed under the supervision of a qualified parole officer who can furnish adequate follow-up service.

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APPENDIX

CLASSIFICATION OF MENTALLY DEFICIENT CHILDREN

Importance of a correct classification. An accurate and comprehensive classification or diagnosis of a mentally handicapped child is of the utmost importance, because it indicates the nature of the causation and the type of the remedial treatment, educational training, and social care and guidance required. To the school administrator it indicates whether the child should be assigned to a class for the mentally deficient, the backward, the disciplinary, the blind, the semi-sighted, the deaf, or the crippled. It indicates whether the child placed in an institution should be assigned to the hospital division for medical treatment, or to the custodial department for mere custody, or to the school department for literary or industrial training, or to the occupational division for cottage, shop, or farm employment.

Logically, therefore, our first concern when a child enters school should be to give him a thorough physical and mental examination so that he may receive promptly the physical treatment which he may require, and that his course of training may be planned from the very outset to more nearly meet his peculiar bodily, mental, and educational requirements. While we are at present unable to make absolutely accurate or thoroughly adequate classifications or diagnoses of children for educational purposes, we are beginning in the educational handling of children to approximate the stage already reached in the hospital treatment of patients. Some school systems now provide physical inspections and psychological examinations, of more or less completeness, at least by means of the so-called group tests of intelligence, to all new school entrants. In addition, a limited number of school systems probably give such examinations to all the elementary school pupils, and possibly all the high school pupils. Many school systems afford periodical physical reinspections, and physical examinations of all applicants for work certificates.

Difficulties regarding the correct classification of mentally retarded children. There has been considerable confusion in the minds of many students regarding the classification of mentally inefficient children from the standpoint of type and grade of defect. There has been irritating ambiguity in the use of terms and discrepancies between various extant classifications. These confusions and discrepancies are due mainly to differences in the point of departure of different systems of classification, to the complicated and obscure nature of the causation of mental deficiency, and, up to within recent years, to the impossibility of accurately measuring its various degrees by means of standardized objective tests. In the case of the living child, the conclusions reached regarding the nature of the underlying brain condition of mental defect must ordinarily be based on inferences drawn from the observation of outward signs and symptoms and the facts discovered from prior post-mortem examinations of similar defectives. Personal and family histories are frequently so barren, obscure, or involved, that no unambiguous clues can be obtained regarding the nature of the agencies responsible for the mental retardation. Until recently, conclusions reached regarding the degree of a child's mental deficiency were also largely inferential. They were based on the child's facial appearance (physiognomy), on the diseases and defects discovered in a physical examination, on observed behavior reactions, and on the child's proficiency in school work. Too much dependence was at one time placed on the results of physical examinations. The nature of a child's mental deviations or personality make-up cannot be obtained from a physical examination but only from adequate psychological methods of examination. But no sufficiently adequate psychological examination technique existed until within our own day. The invention and standardization of a multitude of psychological tests and scales and the elaboration of systematic methods of psychological inspection during the present century has made it possible to measure objectively with a fair degree of accuracy the amount that children possess of many psychic and psycho-physical traits, and to differentiate various degrees of capacity or incapacity or different types of deviation.

Five basic types of classification of mentally inferior children. A comprehensive classification of subnormal children would involve a consideration of at least five basic fields of inquiry. To adequately discuss all these fields would require a sep-

arate volume. The detailed discussion of the subject must perforce be reserved. The limitations of this book permit only a brief reference to each phase of the subject. Students desiring a fuller knowledge of the medical phases should consult the standard treatises on the feeble-minded listed in the bibliography at the end of the Appendix.

I. CLASSIFICATION OF THE MENTALLY DEFICIENT ACCORDING TO THE NATURE OF THE CAUSATION (ETIOLOGY)

From the standpoint of its causation feeble-mindedness may be classified according to the nature of the circumstances or factors which directly or indirectly produced it (that is, its pathogenesis), or according to the nature of the underlying abnormal structural changes found in the bodily tissues (that is, its pathology).

1. **Circumstances of the origin of mental deficiency (pathogenic factors).** The causative factors are either primary or innate (or as they are also called, intrinsic, germinal, or hereditary), or secondary or acquired (also referred to as extrinsic, somatic, or environmental). In primary or inherited mental inferiority the causes have operated prior to conception, and have produced a defective germ plasm (the substance contained in the germ cells by which hereditary characters are transmitted). According to the orthodox view, the defect in the germ plasm is due solely to what is sometimes referred to as "neuropathic inheritance," that is, the transmission of a taint inherent in the germ plasm of the individual's ancestors. The most important of such ancestral or hereditary nervous (or neuropathic) defects are feeble-mindedness, insanity, epilepsy, and mental idiosyncrasies. The author has reached the conclusion from independent investigations that the traditional view of hereditary transmission should be extended to include the transmission of defects produced in the germ plasm by vitiating environmental stimuli. Any destructive incident environmental forces if sufficiently virulent and long continued may modify the parental germ plasm and the modifications thus produced may be transmitted to the offspring. Substances capable of injuring the germ plasm are referred to as blastophthoric. Experiments have shown that the germ plasm may be impaired by the entry of various poisons, such as alcohol, lead, and the toxins of disease, into the blood stream of the parents, and that the germinal modifications thus produced may produce various

mental and physical defects, degeneracies, and deformities in the offspring for several generations. Defects of the germ plasm transmissible to the offspring may also be caused by a lack of essential elements in the parents' dietary, such as certain salts and vitamins.

The conclusion reached by the majority of investigators that most cases of mental defectiveness originate from a defective (cacogenic) heredity would probably be correct if the conception of heredity is modified and enlarged as indicated above.

The secondary or acquired causes, such as poisons, infections, diseases, or mechanical accidents which injure the brain, act directly upon the body of the child after the union of the sperm and the egg. They may thus operate before birth, during birth, or after birth.

When mental defectiveness originates after birth, the child shows normal or fair mental development until the incidence of a severe accident or disease. After this, mental arrest or deterioration sets in, sometimes, however, quite insidiously. It must not be inferred from what has been said that all children who are born mentally defective evince obvious signs of defectiveness at birth. In the majority of cases the defectiveness only becomes apparent gradually as the child grows older and falls more and more behind the normal standard. The acquired cases do not ordinarily show any of the grosser "stigmata of degeneration." These are more prevalent in the congenital cases.

2. Structural defects in the brain tissue (brain pathology). The great variety of possible bodily defects found in mentally defective children cannot be expressed in a single formula, but the seat of the essential pathology of mental deficiency is in the brain (and particularly in the cerebrum and cerebellum). This applies even to the rather infrequent cases in which the origin of the defect is in some other organ of the body, such as the thyroid gland in cretinism. While the difference in the brain defectiveness between the lowest and the highest grades of mentally deficient children is largely one of degree, a baffling variety of conditions is revealed by post-mortem examinations of the brains of mentally defective children.

The "gross" cerebral defects, most of which are perceptible to the naked eye, include areas of hardening (or induration or sclerosis), or softening, incomplete development, or non-development (agenesis), or atrophy of parts of the brain, cavities in the

brain (porencephaly), defective development of the convolutions, diminished size and weight of the brain, and excess of cerebrospinal fluid (which occurs particularly in hydrocephaly). Such gross brain lesions, however, are merely a minor basis of mental deficiency. The essential basis in the majority of defective children consists of structural defects which are so minute that they can only be detected, if at all, by powerful microscopes or appropriate chemical stains. Chief among such "microscopic" defects are numerical deficiency of nerve cells (neurones) in any part of the external layer of the gray matter (the cortex), but especially in the pyramidal layer of cells (the outer brain layer) in the prefrontal (and parietal) regions; imperfect development of the nerve cells in the same regions; the development of new cells, which are largely functionless; and possibly the haphazard arrangement of the nerve cells, although Hammerberg maintains that the cells are just as irregularly arranged in normal brains. J. S. Bolton finds that the depth of the pyramidal layer in the prefrontal region of the brain varies directly according to the degree of mental deficiency, while E. E. Southard and Annie E. Taft conclude from the examination of ten defective brains "that at least the brains of least complexity are correlated with the minds of least range, and that the brains of greater complexity are in a general way correlated with minds of greater range," although they note exceptions to the rule. Hammerberg considers that the stage of brain development attained by the idiot's brain corresponds to the latter stage of normal fetal life, while the brain of the markedly weak minded (possibly the imbecile) reaches the stage attained by the normal brain during the first years of life.

The brain defects to which brief reference has been made serve to explain the intellectual limitations of mentally defective children.

The prefrontal region and the pyramidal layer, which are the least developed in amentia (feeble-mindedness) and the first to undergo dissolution in dementia, are the last to evolve in the evolutionary process. The pyramidal layer becomes the distinguishing characteristic of the mammalian cortex (John Turner, G. A. Watson, and Brodmann). The prefrontal region of the cortex (and the parietal, which occupies the middle division of each hemisphere) contains the "association areas" which stand in direct functional relation to the higher intellectual

processes, while the pyramidal layers serve as the physical basis of the "associational," "psychic," volitional and intellectual functions (J. S. Bolton).

II. CLASSIFICATION ACCORDING TO SPECIAL PHYSICAL OR CLINICAL TYPE

On the basis of gross physical characteristics, most of which are apparent to the naked eye of the trained observer, mentally deficient children may be grouped into a dozen or more physical or clinical types. These special types should be of peculiar interest to any one interested in the care and training of defective children and merit adequate treatment, but space permits only the briefest reference to some of the salient characteristics of the more important types. The following are the outstanding types:

1. Cretins.

Cretinism is due to lack of development or functional inactivity of the thyroid gland, which is located on either side of the larynx and windpipe. When the quantity of the internal secretion and hormone of this gland is insufficient (a condition referred to as hypothyroidism), cretinism results in the young and "myxedema" in the adult. The characteristics, which usually are not apparent at birth, include:

A rough, dry, waxy skin, bloated appearance, a pendulous abdomen, scanty, coarse, dry, darkish hair, a large and long head, broad, thick hands, fingers square at tips, dwarfish stature, slow waddling gait, thick, indistinct speech, dull, apathetic, unobservant expression.

Mentally they are listless, slow, imperturbable, placid, docile, imbecilic, but they may improve considerably mentally and physically from ingestion of thyroid extract, especially if treatment is begun in early infancy. Untreated cases make little educational progress.

The intelligence age (that is, the test age as determined by the Binet scale) of five cretins and four cretinoids (whose characteristics are less decided than those found in frank cretins) examined by the writer varied from two to seven years, the average being 4.8 years. The I.Q.'s averaged 43, varying from 24 to 68. Seventy per cent were diagnosed as imbeciles, twenty per cent as potential morons (who, while rating as imbeciles at the time, would probably advance to the level of morons), and ten per cent as morons. The cretinoids graded somewhat higher than the cretins.

A. C. (Fig. 14) is a sporadic cretin of idiot grade, aged 10.5 years when photographed, who, at the age of ten, measured less than a year by the Binet scale. His skin is rough, coarse, sallow, with purplish mottling, eczema on ears and genitals, scalp dry and scaly, hair sparse, eyes puffy,

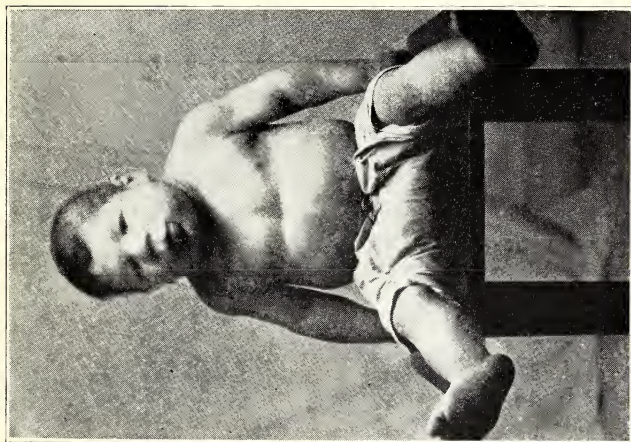


FIG. 14. SPORADIC CRETIN. AGE 10.5; BINET
AGE LESS THAN ONE



FIG. 15. MONGOL IMBECILE. AGE 12.4; BINET
AGE THREE AT AGE OF 11.7; I.Q. 21



abdomen prominent (twenty-six inches), arms and legs short, feet flat, legs held in flexed position. Has umbilical hernia. Under administration of thyroid extract, hair has grown thick, skin smooth and soft, and eczema disappeared. Walked with support at two, unable to walk, talk, and stand alone, or feed himself, but wheels himself about day-room in wheel chair. Very slow in movements. Can string beads and put pegs in peg-board at random. Notices toys and plays with them. Good-natured, but has bad temper, and cries readily when crossed.

2. Mongols, or Mongolians, or Kalmucks.

These children are so-called because of the obliquity of the eyeballs and of the fissure between the eyelids. The characteristics include:

Puffy eyelids, frequent squint, a squat nose with flattened bridge, small ears, often crumpled and protruding, round face, chubby and often florid cheeks, deficient stature, a tongue which is often large, spongy, and furrowed, a short and broad head, with deficient occiput (back), square and broad hands, short fingers tapering at the ends, frequently incurved little fingers, large, clumsy, flat feet, a delicate and weak physical condition particularly susceptible to naso-pharyngeal infections. They are liable to sudden death, and most are short-lived.

The cause of the condition has not been definitely ascertained, but it is probably due to an arrest or perversion of fetal development. These defectives are often referred to as "unfinished" or "ill-finished" children, and the arrest of development has been ascribed to depleted reproductive power due to excessive child bearing or advanced age of the parents. But the ratio of the first, second and third born was appreciably higher among twenty-one Mongolians for whom the order of birth was obtained, than among 680 consecutive non-Mongolian clinic cases varying from idiocy to normality examined by the writer, while the ratio of the late born was decidedly less among the Mongolians. Almost one third of the last born among twenty-two Mongolians were also the first born. The average number of children in the families having the Mongolians, was 4.6, while the average was higher, 4.8, in the families of 894 consecutive clinic cases of various levels of intelligence. While the ages of the parents at the time of the birth of the Mongolians averaged about six years higher than the ages of the parents at the time of the birth of the other feeble-minded children, the ages of the fathers of the Mongolians varied from twenty-three to sixty-four, and of the mothers from twenty-two to forty-five. Moreover, the ages of the parents of the Mongolians who were among the first born was not found to be high, as has been alleged. On the contrary, the parents of the Mongolians who were among the first three born, constitute the youngest group. Half of the Mongolians were born during the period considered most favorable for procreation, half of the mothers being less than thirty-five, and half of the fathers less than thirty-nine. These results do not appear to warrant the conclusion that advanced age is in itself an important

cause of Mongolism. It is probably caused by any agency which can produce generative depletion or perversion — infection, toxication, exhausted or depleted procreative energy.

There is no known specific medical treatment of recognized efficacy. The main reliance for improvement must be placed on educational measures.

Mongols are often superficially bright, observant, imitative, fond of music and dancing, and usually amiable and cheerful when intelligently handled. They often show considerable ability in reading, but little or no ability in arithmetic and limited ability in industrial arts work, because of their clumsy and incoördinate movements.

Ten per cent of thirty Mongols examined by the author were diagnosed as morons, and 86.6 per cent as imbeciles. Only one was classed as an idiot (3.3 per cent). The Binet ages varied from two to seven years, and the I.Q.'s from 19 to 63. The Mongoloids (whose physical characteristics are less marked) graded somewhat higher. For further details from this investigation of various types of mental defectives, see *The Journal of Delinquency* (1924), 169–95.

D. M. (Fig. 15) is a Mongol imbecile who was 12.4 years old when the photograph was taken, and who had a Binet age of three at the age of 11.7, and an I.Q. of 21. Can string beads, put pegs in a board, march in step, carry out one command, button clothes, imitate, but cannot tie a knot, and does not know colors or forms. He likes to pretend he is dusting and helping in the house.

3. Microcephalics.

These children are so-named because of the diminished size of the head, and because of its narrow and rapidly retreating forehead, its pointed crown (vertex) and flat occiput. They have a diminutive brain, with small, simple convolutions. They are often unreliable and subject to violent emotional outbreaks and motor restlessness, although often amiable and cheerful. They are quick and superficially bright, although low grade mentally, and frequently are imitative and loquacious, although their speech may be quite inarticulate. They are difficult to teach.

J. C. (Fig. 16) is a microcephalic idiot, age 29.4 when photographed, Binet age 1.5 at age of twenty-nine. Head circumference 16.5 inches at age ten. Lower jaw prognathic, large mouth, hair on upper lip, eyes small and slanting. One brother a microcephalic idiot, and one cousin feeble-minded. Walked at three. Masturbates. Tends to mutilate hands and other parts of body, often rough with other children, playful, laughs without provocation, makes quick birdlike movements of the head, likes to show off. Capable of matching two colors, of selecting common objects by sense of touch, of dressing and undressing herself, although requiring assistance in lacing shoes, of carrying clothing from one place to another, and of carrying out one simple command, such as "get up" or "sit down."

4. Sclerotics.

This term is applied to children who have areas of hardening (sclerosis) in the brain due to the overgrowth of the fibrous tissue which supports the nerve cells. The head is squarish rather than round, it is frequently enlarged, and massive looking, while the forehead is vertical, making the child appear impressive and more intelligent than he is. The so-called tuberous form is sometimes accompanied by rounded tumors in the brain cortex, kidneys, heart, skin (adenoma sebaceum), and other organs.

5. Hydrocephalics.

These children are so denominated because of the presence of cerebrospinal fluid in the ventricles of the brain (internal form), or between the protective coverings of the brain (external form). The fluid frequently produces a pronounced expansion or a distortion of the skull, distension of the skin, and destruction of the brain tissue. The head appears globular, balloon-shaped or pyramidal instead of square (as in the sclerotic form of enlargement), the face appearing diminutive in contrast. The forehead tends to bulge forward, the eyeballs are often depressed, exposing the "whites of the eye" (sclera). The head often undergoes gradual expansion during a period of years until it may measure thirty or more inches in circumference.

Mentally, hydrocephalics vary from idiocy to normality, the external form producing less defect. They are educable according to grade of mentality, stage of the disease (whether stationary or progressive), and associated defects.

The causation is obscure, but most cases probably develop after birth from chronic meningitis, or some other infection. There is no specific cure, and the outlook is unfavorable in practically all the congenital, progressive and ventricular (or internal) cases.

O. D., the hydrocephalic shown in the frontispiece who classifies among the higher grades of mental defectives, had at the time of the examination, at the age of 17.8 years, a Binet age of 8.2 years by the 1908 scale and 7.4 by the 1911, I.Q. 46, and in rate of psycho-motor reaction (Seguin form-board) measured 6.5 years, according to the author's norms, whether based on the best trial or the average of three trials. She was very slow in her motor and intellectual reactions. In anthropometric measurements her percentiles were as follows: standing height, eighth; sitting height, thirtieth; weight, tenth; right grip, ninth; and left grip, eighth. Her head was large at birth. The head girth at eighteen months was eighteen inches and at 17.8 years 26.5 inches. She did not sit up until eighteen months old, prior to which time her head had to be propped up with a pillow or supported by some one's arm. Almost nineteen years old when photographed. At the age of twenty-two, after a few months in the kindergarten and ten years in a special school in a city school system, she did about third-grade work in reading and spelling, and second-grade work in oral and written language

and arithmetic. She did well in folk-dancing, fairly well in running, tactics, and marching, but poorly in mental and physical games, in which she was disinterested and lacked confidence. She did well in writing, brushmaking, plain hand sewing, and simple decorative stitching, and was excellent in sewed and woven basketry which she greatly enjoyed. Her greatest deficiency was in arithmetic, especially problem work, and her greatest capacities in writing and music. She showed poor judgment, gave good attention, made good effort, but was slow to observe and quickly tired, was obedient and cheerful, but timid and shrinking. Has always shown lack of self-confidence.

6. Paralytic (or Plegic) Forms.

The types of motor paralysis to which these children are subject may be of the spastic variety (in which there is muscular rigidity and increased reflexes), which shows that the lesion is in the brain, or of the flaccid variety (in which the muscles are flabby and the reflexes abolished), which is due to a lesion of the spinal cord. Both sides of the body may be involved (diplegia), or only one side (hemiplegia), or only the lower limbs (paraplegia), or only one set of muscles (monoplegia). The paralyzes dating from birth, due to prenatal disease, or inflammations, or birth injuries, are known as birth-palsies (or Little's disease). They are of the spastic type, and are more frequently diplegic than hemiplegic. Muscular incoördination is prominent, as seen in the writing which often betrays wild, irregular movements. Children with birth-palsy are often subject to slow writhing and twisting involuntary movements of the fingers and hands (athetoid movements), which greatly interfere with the skillful use of the hands.

The post-natal type, due most frequently to injuries or infectious diseases, may be spastic or flaccid.

The mental level in paralytics varies from profound idiocy to super-normality. Eighteen or 62 per cent of twenty-nine consecutive paralytics of various types examined by the writer in the St. Louis psycho-educational clinic were diagnosed as feeble-minded, 7 per cent as approximately normal, and 31 per cent as backward or borderline. Of twenty-seven crippled children of various types in the Dayton school for crippled children, 18.5 per cent varied in I.Q. from 56 to 74, 37 per cent from 78 to 95, 33.3 per cent from 99 to 121, and 11.1 per cent from 125 to 145. However, even some of those who are apparently normal in intelligence are more or less irritable or emotionally unstable, or rather childlike or infantile. The birth-palsy cases among defectives tend to be of higher intelligence than the post-natal cases, although they are frequently judged more deficient because of the physical disabilities and grave speech defects to which many are subject.

Many paralytics are capable of considerable literary advancement as well as improvement in motor coördination.

F. H. (Fig. 17) is an imbecile afflicted with spastic right hemiplegia, or paralysis of one side. Age when photographed 18.2. His Binet age a year



FIG. 16. MICROCEPHALIC IDIOT. AGE 29.4;
BINET AGE 1.5

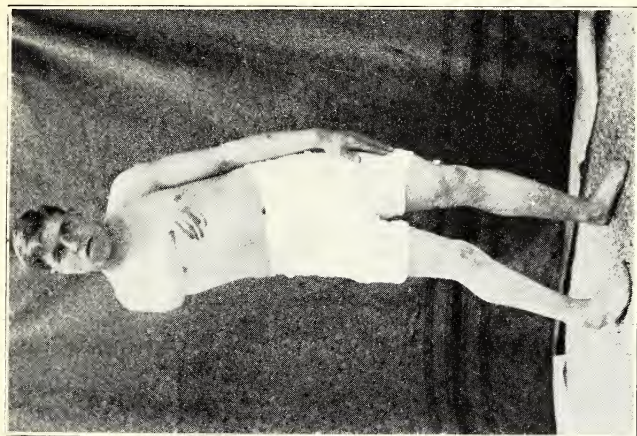


FIG. 17. SPASTIC PARALYSIS OF RIGHT SIDE
(HEMIPLEGIA). AGE 18.2; BINET AGE 4.6;
I.Q. 27



FIG. 18. SPASTIC PARALYSIS OF LOWER LIMBS (PARAPLEGIA). AGE 11; BINET AGE 6.3 AT AGE OF 10.4; I.Q. 59

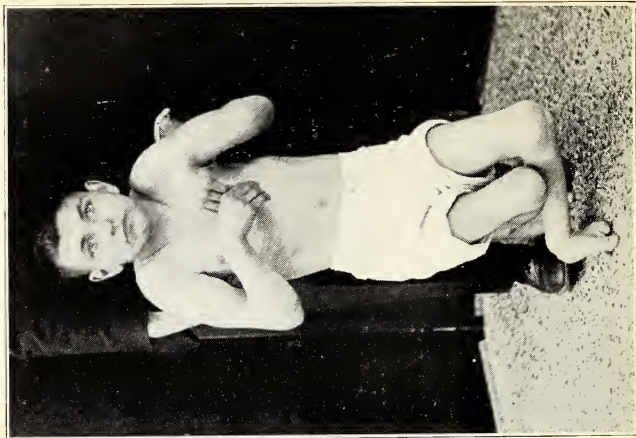


FIG. 19. SPASTIC PARALYSIS OF BOTH SIDES (DIPLEGIA). AGE 17; BINET AGE BETWEEN ONE AND TWO AT AGE 12

earlier was 4.6, and his I.Q. 27. Right arm and leg atrophied, right hand contracted, wrist flexed, hearing and vision poor on right side, nose deviates to right, facial paralysis. Illegitimate. Walked and talked at four. Convulsions involving the whole body since that time. Usually good-natured, but inclined to be quick-tempered, irritable, fretful, and stubborn. Cannot wash, dress himself properly, read, or write, but does simple, outdoor industrial work that can be done with one hand, such as sorting wood, and picking up stones and papers.

W. E. (Fig. 18), who has spastic paraplegia, or paralysis of the lower limbs, was eleven years old when photographed. His Binet level was 6.3 at the age of 10.4, giving an I.Q. of 59. Instrumental birth, with asphyxia. Severe fever at six months, feet drawn up. Talked when one year old, but did not walk until eight. Spastic gait. Knees semi-flexed, cannot be extended. Left talipes equinus. Does not read or write, but does kindergarten work, knows color and form, can string beads, do simple weaving, simple hand work, lace, button, place pegs in peg-board, and plays with toys. Good disposition.

Y. G. (Fig. 19) is an idiot afflicted with spastic diplegia, or paralysis of both sides, has never been able to walk or creep, or sit straight in a chair, or talk. Cannot bend body. He pulls himself along on the floor on his stomach. Low hair line. Drools. Fretful, stubborn, and subject to passionate outbreaks of temper. One sister a spastic diplegic idiot. Photographed at age of seventeen. At age of twelve had a Binet age between one and two. Can recognize toys, distinguish candy from wood and remove wrapping, and make marks with a pencil, and obeys commands so far as he is physically able to do so.

7. Epileptics.

The most prominent physical manifestations of epilepsy, which is essentially a disease of childhood, are the sudden, inconstant, involuntary seizures or convulsions, which are attended by loss of consciousness. The seizures may be of the *grand mal* type, in which the child falls to the floor unless protected and in which the various bodily members are thrown into violent contortions, the *petit mal* type, which is characterized by a momentary loss of consciousness, with slight localized motor disturbances, or none at all, the *Jacksonian* type, in which the jerking is confined to one member (for example, one hand), and the *serial* type (*status epilepticus*) in which many convulsions follow in rapid succession, the subject frequently remaining unconscious during the series of attacks. Some epileptics are subject to automatisms (or "epileptic equivalents") in which condition they carry out acts with little or no consciousness. In this twilight state criminal acts may be committed apparently with little consciousness at the time of the crime and complete subsequent forgetfulness.

Many epileptics suffer from various temperamental and emotional disabilities — such as irritability, contentiousness, fickleness, impetuosity,

sulkiness, irascibility, peevishness, anger, mendacity — and intellectual limitations, although some epileptics are normal or supernormal. About two-thirds of 333 institutional cases and 47 public-school cases examined by the writer were classified as feeble-minded, some, however, being demented rather than aments. Epilepsy may be a complication of almost any type of feeble-mindedness (although very rare in Mongolism). Its tendency is to accentuate the degree of the mental deficiency and limit the possibilities of training. On the other hand, repeated convulsions may injure the brain and thus produce feeble-mindedness, backwardness, or dementia in subjects originally possessed of fair or normal mentality. It is astonishing, however, how some brains are able to resist for many years the ravages of the seizures.

Epilepsy is still largely a *morbus incognita*, though many of the predisposing and exciting causes of convulsions are known. Many believe that a defective heredity is the underlying cause. The treatment is still largely symptomatic, the main reliance being placed on depressant or sedative drugs for aborting the convulsions, the regulation of the diet, outdoor employment, proper social diversions, protection against falls, lifelong supervision, and educational training adapted to the subject's age, grade of intelligence, and the course of the disease.

8. Progressive types.

The typical feeble-minded child improves slowly up to the period of maximum physical and mental development, and does not dement until the period of senile deterioration supervenes. But deterioration may, and frequently does, occur in epileptic and hydrocephalic children, and is a typical phenomenon in the two following types.

Juvenile paralysis or general paralysis (Thomas Clouston), which is a disease of the nervous system due to hereditary syphilis. The mental inferiority may appear at birth but usually develops very slowly and insidiously until the physical signs appear (irregular, dilated pupils, absence of the light but not the accommodation reflex, fibrillary trembling of the tongue and lips, hesitant and indistinct speech, and developing paralysis of the limbs), when the dementia becomes markedly progressive. In a few cases the disease may be arrested by early anti-syphilitic treatment. Dementia in children without antecedent insanity or epilepsy is usually indicative of juvenile paralysis (or paresis).

Stress should be laid on the fact that many children suffering from active syphilis (a contagious venereal disease) are neither paretic nor feeble-minded, but they are frequently more or less infantile, mentally subnormal, temperamentally unstable, incapable of sustained effort, and incapable of making the progress in school work to be expected from their rating in intelligence tests. All children suspected of having active syphilis should immediately be given a proper blood test (the Wassermann), and active anti-syphilitic treatment when the results are positive.

Amaurosis or "*amaurotic family idiocy*" (B. Sachs), a type of infantile brain degeneration confined almost exclusively to Jewish children, previously healthy, begins about the third month, and leads to weakness of the muscles of the back and neck, blurred vision, eventual blindness, and a fatal termination from heart disease or pneumonia within a couple of years. On examining the retina a light gray oval patch containing a cherry red spot is found in the center of vision. Fortunately the condition is very rare. The author has met with only two cases, Jewish siblings, less than three years of age, unable to stand or sit, and almost blind, out of over four thousand children individually examined in several States during almost fifteen years.

A somewhat similar type of mental deterioration occurs among children of six or seven, previously healthy, and slowly progresses to a fatal termination in seven or eight years. These diseases are assumed to be caused by some toxin. There is no known cure.

Dementia præcox. Reference is made to this condition because it is occasionally confused with feeble-mindedness. It is a form of adolescent insanity (psychosis) which may effect both feeble-minded and mentally normal children after the onset of puberty, and which, in some of its forms, leads to emotional, instinctive, and intellectual deterioration, and conduct disorders. There is no known cure for this disease, although the hope is now extended that it may be prevented by safeguarding the child from the effects of toxins and mental strains and stresses.

9. Meningitic and Inflammatory types.

Mental deficiency may follow severe acute infectious diseases, such as cerebro-spinal meningitis, inflammation of the brain (encephalitis), and infantile paralysis, which may produce hardening and scar formation in the nervous tissue, and thickening and adhesion of the brain membranes which interfere with the cerebral circulation. Among 872 cases investigated by the writer, cerebro-spinal meningitis occurred 345 per cent more frequently in the personal histories of the feeble-minded than of the normal children. Unrecognized antenatal meningitis may be responsible for more cases of mental defect than is now suspected. Mental deficiency may also follow, although infrequently, some of the milder infections, such as scarlet fever, typhoid, diphtheria, or measles. Blindness and deafness are also possible sequelæ of infectious diseases. There is, unfortunately, no medical cure for the mental defect after the brain damage has been done. The most important line of advance in this field is to safeguard children from these infections. Diphtheria and typhoid can now be prevented by the administration of proper antitoxins. The educational prognosis varies, in general, with the degree of the mental defect.

10. Infantile types (infantilism).

The two most prominent characteristics of infantilism are sexual and

mental immaturity. These children are childish, puerile, emotionally immature, and weak and infantile in intelligence, but they are not always mentally defective. Some authorities believe that there are ten or twelve different forms or types of infantilism, depending upon the nature of the cause. In the so-called idiopathic form no definite cause is discoverable, while the so-called cachectic form is ascribed to a serious general disease or infection, such as tuberculosis, syphilis, malaria, or chronic intestinal infections. The most definite and clearly recognized types are due to deficient functioning of the glands of internal secretion (or endocrine glands), the best known form of which, cretinism (or hypothyroidism), has already been discussed.

"Pituitary infantilism" is due to underfunctioning of the posterior lobe of the pituitary gland, which is a gland of internal secretion about the size of a hazel nut situated at the base of the skull. When this condition develops before adolescence, the stature remains short, the hands and feet small, the beard does not grow, the genital organs remain undeveloped, there is an excessive accumulation of fat, while mentally the individual appears dull and torpid.

Some authorities believe that definite types of infantilism may be traced to malfunctioning of the thymus (a small gland below the thyroid) and pineal gland (situated behind and above the pituitary), but this is questioned by others. None of these types of infantilism responds favorably to the administration of glandular extracts except cretinism, although favorable reports from the administration of pituitary extract occasionally appear.

It should be noted that only a few types of subnormal children display decided infantile mental characteristics, namely, the cretins, the Mongols, many microcephalics, and many paralytics, especially the spastic cases.

II. Sense deprivation types.

A child might remain immature or undeveloped and eventually stagnate as permanently mentally deficient because of congenital or early acquired blindness or deafness which has been uncompensated for, or uncorrected by, appropriate remedial and educational treatment. The marvelous extent to which the effects of sensory defects may be compensated for or overcome by the development of other sense organs is now well known. Had Laura Bridgman and Helen Keller been sent to an institution for the feeble-minded and been given merely the routine instruction provided in such institutions, they would probably have stagnated as feeble-minded and have remained unknown to the world. Appropriate training and instruction, if early begun, will remove mental deficiency due to sense deprivation (assuming, of course, that the sensory defect is not superposed upon a background of primary mental deficiency).

Children stagnating as mentally defective, mentally inferior, or savage, because of lack of adequate and appropriate social and educational contacts

have been classified as "isolation" types or cases. The number of such cases in this country is probably negligible.

Limitations and values of classification of mentally deficient children according to the nature of the causation and the clinical type. Even a limited knowledge of the nature of the causative factors, of the structural defects, and of the physical type of mental inferiors will prove of great interest and sometimes of considerable value to the practical educational or social worker. Nothing less than a comprehensive purview, which must include the question of causation in its various aspects, will prevent the formation of warped judgments and enable us to erect an adequate foundation for a science of the prevention of mental inefficiency and the increase of mental efficiency. Moreover, the discovery of the nature of the cause and the clinical type will sometimes give valuable clues respecting the nature of the required hygienic, surgical and medical treatment — as in the case of epileptics, cretins, and syphilitics — the required educational training, and the social forecast (prognosis), as in the case of Mongolians, microcephalics, or general paralytics.

In spite of its high intrinsic value for an adequate scientific understanding of mentally deficient children, this type of pathological information is, nevertheless, subject to certain limitations which seriously minimize its usefulness in our practical work of ministering to the needs of the living individual cases. For even were it possible to discover the exact brain defects in the living mentally defective child, this knowledge in most cases would prove of minor value, because the brain defects are not removable by surgical interference, nor do they yield any reliable index regarding the child's mental level, or particular personality traits, or degree of educational improvability. There is, of course, a general parallelism between the extent of the brain defectiveness, and the mental defectiveness, but the correspondence is not complete or invariable. Post-mortems have shown that some low-grade cases have had no apparent brain defects, while some high-grade cases have had gross lesions. The chief handicap, however, is that our knowledge of the brain condition of the living defective is largely inferential. There is at present no means of discovering the exact brain conditions of a deficient child except by a careful post-mortem examination, and the very minute brain changes are not revealed by the techniques in present use.

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TABLE 3. DIAGNOSIS OF 2774 CONSECUTIVE CHILDREN INDIVIDUALLY EXAMINED IN A PUBLIC SCHOOL PSYCHO-EDUCATIONAL CLINIC

INTELLIGENCE DIAGNOSIS

	Boys		Girls		Both Sexes	
	No.	Per cent ^a	No.	Per cent ^b	No.	Per cent ^c
Normal.....	78	4.0	13	1.5	91	3.2
Retarded.....	87	4.4	21	2.5	108	3.8
Backward.....	556	28.5	145	17.5	701	25.2
Borderline ^d	571	29.3	210	25.3	781	28.1
Diagnosis deferred.....	57	2.9	35	4.2	92	3.3
Mentality undetermined	5	0.2	2	0.2	7	0.2
Morons ^e	390	20.0	254	30.7	644	23.2
Imbeciles.....	198	10.1	144	17.4	342	12.3
Idiots.....	5	0.2	3	0.3	8	0.2
Total feeble-minded	593	30.4	401	48.4	994	35.7

SUPPLEMENTARY DIAGNOSIS — SPECIAL TYPES

Speech defectives.....	395	20.28	150	18.13	545	19.64
Motor aphasia.....	17	.87	2	.24	19	.68
Delinquents.....	374	19.2	70	8.46	444	16.00
Visual aphasia.....	14	0.72	2	0.24	16	0.57
Dyslexia.....	90	4.62	8	0.97	98	3.53
Visual aphasia and dyslexia.....	104	5.34	10	1.2	114	4.10
Epileptics.....	30	1.54	17	2.06	47	1.69
Psychopathic.....	25	1.28	8	0.97	33	1.18
Unstable and neurotic..	141	7.24	53	6.41	194	6.99
Mongolians.....	12	0.61	11	1.33	23	0.86 ^f
Cretins.....	3	0.15	5 ^g	0.60	8	0.28
Hydrocephalics.....					4	0.4 ^h
Paralytics.....					29	1.4 ⁱ

^a Based on the total number of boys (1947). ^b Based on the total number of girls (827). ^c Based on the total number of boys and girls (2774). ^d Includes 79 boys and 46 girls diagnosed as potential feeble-minded. ^e Includes 94 boys and 82 girls diagnosed as potential morons. ^f Three Mongoloid boys and two Mongoloid girls. ^g Two cretinoid defectives. ^h Based on 900 consecutive cases only. ⁱ Based on 1986 consecutive cases only.

Under the intelligence diagnosis the successive groups or classes are arranged in the order of descending intelligence, or diminishing intelligence quotients. The morons represent the highest grades of the feeble-minded. The supplementary diagnoses are restricted to special types, and do not include physical defects or diseases. In the case of re-examined children the final classification has been used.

The information derived from a post-mortem, moreover, comes at a time when it can be of no service to the living child.

The difficulty of determining the exact causative factors or mode of origin of the child's defect, is sometimes equally great. This is due to the paucity, complexity, or multiplicity of the antecedent conditions revealed by the investigation. It is frequently impossible to determine in the case of the individual child which, among the causative factors found, are primary, and which are merely secondary, contributory, or exciting, or purely irrelevant.

Finally, only a small ratio of the high grade mentally defective or backward children belong to any of the special clinical or physical types thus far clearly recognized. Lapage estimates that less than 10 per cent of mental defectives in general belong to the special types. Among 2774 school children individually examined by the writer (see Table 3) only 4.7 per cent were epileptics, hydrocephalics, paralytics, Mongolians, and cretins. If we exclude cases among the epileptics, paralytics, and hydrocephalics which were not classified as feeble-minded, these five types constitute 9.8 per cent of all the mental defectives of all grades included in the tabulation. The number of imbeciles among the special types constituted 19.4 per cent of all the imbeciles in the tabulation, and the number of morons among the special types 4.7 per cent of all the morons, as shown in Table 4.

TABLE 4. THE PERCENTAGE WHICH THE IMBECILES AND MORONS AMONG THE SPECIAL TYPES CONSTITUTED OF ALL THE IMBECILES AND MORONS

	Percent- age of all Imbeciles		Percent- age of all Morons	Percent- age of all Feeble- Minded
Epileptic imbeciles.	6.4	Epileptic morons.	1.4	3.1
Paralytic imbeciles.	4.3	Paralytic morons.	2.1	2.9
Hydrocephalic imbeciles. ...	0.9	Hydrocephalic morons ...	0.6	0.7
Mongol imbeciles.	5.8	Mongol morons.	0.46	2.3
Cretin imbeciles.	2.0	Cretin morons.	0.15	0.8
Total.	19.4	Total.	4.71	9.84

III. CLASSIFICATION ACCORDING TO PSYCHOLOGICAL CRITERIA

Types of psychological classifications. There are two types of psychological classifications of deficient, the one based on quantitative or psychometric measurements or estimates and the other

based on qualitative differentiations. In the quantitative classification the aim is to rate the individual according to amount or degree of defectiveness, either with respect to all-round ability (for example, "general intelligence") or with respect to any particular trait (for example, memory or attention). When the classification is qualitative the purpose is to describe the *quality* or the *kind* of mental deviation found. For example, what is the character of the memory defects in the feeble-minded? Are both logical and rote memory affected and, if so, equally or unequally?

Importance of this classification. It may be said at once that the psychological classification of subnormals is not necessarily or primarily causal. The exact delineation of the psychic peculiarities furnishes valuable descriptive data but may reveal absolutely nothing regarding the causes of the child's defect; indeed it will not do so unless the causes are psychic, as is the case in at least some functional disorders. Nevertheless this type of classification is fundamental for a proper comprehension of mental deficiencies, for three reasons:

(1) The psychological diagnosis reveals at least one important cause of the deficient's educational and social maladjustment.

(2) Mental inferiority (or peculiarity) can be diagnosed only by means of a psychological examination. The degree of deficiency can at best only be inferred — and such inferences are frequently wide of the mark — from a physical examination, except in the few clinical or physical types, already considered, in which the associated mental conditions are well known.

(3) The psychological examination gives important clues regarding the degree of educability of the child, the kind of training needed, the occupational possibilities, and the required social control or disposition. With respect to these three values the psychological classification yields more important data than the physical examination in the case of the feeble-minded, and also a large proportion of subnormals of various grades whose condition cannot be traced to discoverable or correctable physical impediments.

Various Criteria Employed in Psychological Classifications

How shall we classify subnormals psychologically? The detailed consideration of the psychological methods of examination and classification is reserved for another volume. Historically a considerable variety of criteria or functions have been employed

in the classification of the feeble-minded. The following represent, briefly, the most important of such classifications. The classifications based on single traits or functions, will be considered first.

1. According to contrasting emotional types or characteristics

The classical classification groups all the feeble-minded under two headings: (1) the unstable, mobile, restless, excitable, hyperkinetic, hair-trigger, psychopathic, disciplinary type; and (2) the apathetic, placid, slow, inert, asthenic type. But this classification is too rigid. There are many individuals who do not classify in either group. Some are rather neutral or indifferent, being neither very unstable nor apathetic, while others are of a mixed type, being sometimes excitable and sometimes apathetic. These emotional characteristics exist, in varying degree, in all kinds of individuals, normal and abnormal; but particularly in the neurotic, psychotic (mentally disordered) and feeble-minded.

The so-called psychopath. Recently voluminous descriptive accounts have appeared of a type of child whose defects are chiefly or wholly emotional, "affective," temperamental, or volitional; who is inclined to be restless, irritable, excitable, impulsive, deficient in volitional control or power of inhibition, lacking in the feelings of gratitude, pity, affection, sympathy, or social solidarity; who is selfish, morbidly egotistical, suspicious, frequently morally insensible, callous, incapable of feeling shame or remorse, viciously or criminally inclined, crafty, scheming, mendacious, frequently pathologically mendacious (lying without motive or intelligible end), thieving, wantonly destructive or cruel, sexually precocious or abnormal, sometimes sadistic (receiving sexual enjoyment from inflicting severe pain upon the victim); and who is usually more or less deficient in intelligence, but may be normal or supernormal.

The above characterization may seem to be overloaded with descriptive adjectives, but it does scant justice to the profusion of terms which have been applied to a type of defect which some believe constitutes the very core of character or personality defect, and the central defect in a type of individual whom they regard as the potential criminal par excellence and as constituting the largest single group of the actual criminal class. They regard these individuals as abnormal if not pathological, well-nigh incurably anti-social, and partly or wholly irresponsible.

Equivalent terms and assumptions. Various terms have at different times been applied to this type of personality defect: constitutional immorality (Tanzig); moral insanity (Müller, Mendel, Tiling); moral idiocy (Brunet); moral imbecility (Grohmann); psychopathy, or psychopathic or constitutional inferiority. An English statute has for over two decades given legal sanction to the concept of moral imbecility. Moral imbeciles are defined as "persons who from early age display some permanent mental defect coupled with strong vicious or criminal propensities on which punishment has little or no deterrent effect." The underlying assumption has generally been that these children, especially when vicious tendencies have appeared early in life (and some would not employ the category unless the tendencies did appear early), are congenitally defective in the instincts, impulses, feelings and sentiments which are at the base of the so-called moral sense, and that therefore the anti-social tendencies are largely ineradicable. Some believe that these children suffer from a specific moral or ethical defect: they are "morally color blind."

Criticism. It may be doubted whether there are any real moral imbeciles. In my block of 2774 consecutive clinic cases only one was diagnosed as a "moral imbecile" (though more had been so reported), but his conduct so improved in the course of a few years as to render the diagnosis questionable. Among the feeble-minded, only one per cent are moral imbeciles, according to Mary Dendy; only five per cent are "vicious, immoral and anti-social," according to A. Eichholz; and less than four per cent of the feeble-minded in "lunatic asylums" are "morally defective," according to the 1909 report of the Commissioners in Lunacy in England. James Kerr considers that the prevalence of moral imbecility is very small and W. C. Sullivan that only a "very small amount" of juvenile criminality can be attributed to it. Mönksmöller, however, classified as moral imbeciles thirteen of two hundred young offenders examined in the Lichtenberg reformatory. Most of these cases probably were feeble-minded, insane, epileptic, hysterical, or psychopathic. In America, where the terms moral imbecility, moral idiocy, moral insanity or constitutional immorality have not come into considerable vogue, a strong tendency has recently set in to classify under such categories as psychopathy (less frequently neuropathy), psychopathic inferiority, or constitutional inferiority, all individuals who dis-

play emotional, instinctive, temperamental or volitional defects. This is especially the case when they evince criminal propensities, and when they cannot be classified as outspokenly psychotic (insane), or psychoneurotic (neurasthenic, hysterical, psychasthenic, migrainous), or epileptic, or feeble-minded (though some are classed as both feeble-minded and psychopathic). Not many authorities, however, are yet agreed as to whether there is a definite nosological or diseased entity corresponding to these terms, or whether they are merely convenient, descriptive terms for a group of ill-defined symptoms not classifiable under any of the recognized categories. Certainly wide differences exist in the extent of the practical employment of the concept of psychopathy by different examiners of defectives and delinquents. Some find an abundance of psychopaths; others very few or none at all. Among my 2774 clinic cases only 1.2 per cent were diagnosed as psychopathic, although sixteen per cent were reported as subject in some measure to some form of misconduct. But far more, namely, seven per cent, were classified as nervous or neurotic. Until more is known regarding the "psychopath," it seems preferable to apply the term "defective delinquent" (Walter Fernald) as a convenient descriptive designation free from unverified underlying nosological assumptions, to delinquents who, because of the strength of their vicious propensities, are in need of supervision or control for an indefinite period and who cannot be diagnosed as feeble-minded, insane, or epileptic.

2. According to differences in motor capacity.

Hack Tuke classified the feeble-minded into (1) those capable of reflex movements only, (2) those capable of ideo-motor and emotional responses, and (3) those capable of volitional acts. Such a classification, while suggestive, is not sufficiently precise to be of much practical service for determining the efficiency of the motor apparatus or for properly grading and differentiating the motor or psychomotor capacities and peculiarities of sub-normals. In order to provide standardized tests for this purpose psychologists have devised a large number of tests designed to measure speed, extent, precision and steadiness of movement, motor coördination, form discrimination, constructive ability, resolution, determination; ability to follow instructions, to plan, to analyze objective situations, and to adapt means to ends, general motor ability or motor age, the amount of skill possessed in

specialized lines of craftsmanship, and the individual's "will-temperament" or volitional pattern. The progress in this field has been so rapid that scores of so-called form-board, construction, puzzle, and mechanical-ingenuity tests are now available. Discussion of the individual tests must be reserved for another volume.

3. According to the power of judgment or common sense (Hoffbauer, and Binet).

Binet emphasized that one of the fundamental defects in the whole group of the feeble-minded was lack of "common sense" or good judgment. This criterion is indeed more fundamental than mere erudition or even the intelligence level, for no matter how ignorant or otherwise defective an individual may be, he cannot be considered feeble-minded if he shows good judgment in the practical work-a-day situations of life. Many individuals who cannot qualify in the standardized intelligence tests of the conventional type have enough acumen or practical sense to manage their affairs with passable success. Although no definite scale of tests has been devised by which to measure the soundness or degree of maturity of judgment (unless the general intelligence tests do this indirectly), nevertheless the individual's ability to analyze, understand, originate, infer, judge and reason can be estimated and observed in many intelligence and performance tests, many practical situations of life, and in a few tests specifically designed to measure initiative, judgment and common sense. Thus, to refer to only two of the older non-technical tests of "common sense": The suspected mental defective is told to sit down on a chair previously turned upside down, or to put on a coat previously turned inside out, and notation is made of whether the child has enough sense to right the chair or adjust the coat before proceeding to carry out the request.

4. According to the power of attention.

One of the earliest tests of the degree of trainability of mental defectives was the so-called "fixation test" in which the child's eyes were stimulated by a bright light in a darkened room. If, instead of staring vacantly into space, the child was able to fixate the stationary light, and especially to follow with the eyes the light when moved about, he was considered to be trainable and to be a fit candidate for a training institution.

P. Sollier classified defectives on the basis of degree of attention defect into (a) absolute idiots, in whom attention is completely absent, (b) simple idiots in whom it is feeble and difficult to elicit, and (c) imbeciles, in whom it is unstable.

Value of criterion. This is one of the most valuable of the single criteria of mental deficiency. There is generally a fair correspondence between the strength of voluntary attention and the amount of mentality and degree of trainability. In general, the more pronounced the intelligence defect, the more difficult it is to secure and hold the attention. The lower grades of mental defectives are largely incapable of other than instinctive or passive attention. Voluntary attention is aroused and held with extreme difficulty. Attention constantly roves in idiots. Imbeciles attend voluntarily for only brief periods of time; they quickly tire, and are constantly distracted by all sorts of trivial occurrences. Their attention possesses little depth or persistence, and little tendency toward spontaneous return after distraction. Morons are capable of voluntary attention, but cannot concentrate for long on abstractions. They are easily distracted but will spontaneously return to their assigned tasks. Backward and delinquent children are often listless and inattentive because disinterested in the subject matter. They often fatigue rapidly but the fatigue may be due to boredom, and is more apparent than real. The trainable animals are those whose attention can be elicited and held. The young infant makes little mental progress until the roving eyes can be fixed, and the attention caught. In fact, attention is coterminous, and almost synonymous, with consciousness. Wherever there is consciousness there is a modicum of attention. It is a good practice for every teacher to observe the characteristics of the child's attention: the readiness with which it can be aroused, its depth, persistence, ease of distractibility, and tendency to return spontaneously after distraction. The inability of the child to concentrate or to sustain attention is a suspicious sign, suggestive of obstructed breathing (producing aprosexia), or poor circulation, or malnutrition, or mental deficiency, or nervous, emotional, and volitional instability, or lack of interest, or absorption in other pursuits. Aprosexia has been applied to inattention due to physical defects, such as obstructed breathing.

Limitations. Nevertheless, valuable as this criterion is, the correlation between degree of attention and grade of mentality or intelligence is not perfect. The neurasthenic works rapidly and

energetically, possessing considerable depth of attention, but is quickly exhausted, possessing little persistency of attention. Although the neurasthenic may be highly intelligent, attention soon flags. The attention in many psychotics is highly distractable although there is little evidence of intellectual deterioration. Fatigue, lack of sleep, lack of interest, emotional disturbances, malnutrition, obstructed breathing, and a stuffy atmosphere may induce inattention even in the brilliant. It is also possible that specific volitional or attention defects may exist without obvious intellectual defects.

5. According to degree of speech development or speech defectiveness.

Esquirol divided the feeble-minded into three grades on the basis of speech ability: (1) the mutes, who cannot produce any sounds at all, (2) those who can only utter cries or monosyllables, and (3) those who can form words, or form short detached phrases, or broken sentences. In my experience absolute mutes are exceedingly rare among the feeble-minded, while the highest grades can express themselves in complete sentences, at least short sentences, unless the thought is complicated.

In the classification of Alfred Binet and Th. Simon, the idiot cannot talk, the imbecile can speak but cannot communicate in writing, while the débile (a moron reaching a maximum mentality of nine years) can speak, read, and write.

G. Makuen regards speech development and the ability to improve from speech training as one of the best diagnostic tests of feeble-mindedness.

There is in general a fairly close correspondence between the degree of intelligence and the power of expression, the stage of speech development and the incidence of speech defects. The muscles of articulation are par excellence the "mental muscles," the muscles chiefly employed by civilized man for giving expression to thoughts and feelings. But properly to coördinate the delicate and complicated neuromuscular apparatus of speech requires a higher order of mentality than to use any other set of muscles. So delicate is the speech mechanism that thousands of variations of sound can be produced by slight modifications in the tension and movements of the speech musculature. Because of the complexity and delicacy of the numerous psychic, sensory and motor coördinations involved, the control of the speech

mechanism develops but slowly, and is easily disturbed, producing various speech disorders and defects. We do find, in point of fact, that speech delays and defects occur more frequently in subnormals.

C. D. Mead found that the average age when 25 sons and 25 daughters of Columbia University graduate students were able to "use a word intelligently" was 15.7 months, with an extreme range of from 9 to 25 months, while the median for 92 institutional cases of mental defectives (probably of the higher grades) was 34.2 months, with an extreme range of from 12 to 156 months.

Lapage found that 61 high grade mental defectives began to talk at 1.8 years, and 50 low grade at 3.5 years, that 88 had good speech at 1.9 years, and that 64 had defective speech at 3.2 years. The writer found that 278 normal children (that is, not feeble-minded, although some were backward) first used single words at 1 year (the upper limit being 4 years), 272 subnormal children at 1.8 years, and 164 feeble-minded children at 2 years (with an upper limit of 7 years), the age being 1.6 years for the morons and 2.3 years for the imbeciles. The normals first used short phrases or sentences at 1.7 years (with an upper limit of 8 years), the subnormals at 2.6 years, and the feeble-minded at 3 years (with an extreme of 11 years), the corresponding figures for the morons and imbeciles being 2.3 and 3.7.

The writer's speech investigations in the St. Louis schools showed that there were over nine times as many speech defects among the children in the special schools for the mentally defective and seven times as many among the children examined in the clinic (about ninety per cent of whom were more or less subnormal, and about thirty-five per cent feeble-minded), as were found among the pupils in the regular elementary and high school grades (see p. 246).

Notable delay in talking constitutes a presumption of mental defect in the absence of an adequate specific cause. A child who cannot speak at six or seven, or one who is still talking baby talk, or lisping, or slurring badly, is probably feeble-minded unless the speech delay or defect can be traced to deafness, impaired hearing, motor aphasia, paralysis of the speech muscles, or lack of opportunities for acquiring speech. However, the converse conclusion, namely, that a child is mentally normal because he can talk glibly or fluently, does not follow. There are imbeciles who possess amazing fertility of expression and are exceedingly loqua-

cious. But, while they are perfect chatterboxes, their speech is largely made up of inconsequential jabber, logorrhea, or confabulations. They are merely good polliès.

Valuable as the above criteria may be in the classification of subnormal children they are quite subsidiary to the general mental capacity of the individual.

6. According to general mental feebleness or general level of intelligence.

This type of classification, which has recently become dominant because of the development of the so-called graded scales of intelligence, was probably presupposed or implied in the classifications of some of the older writers. Thus Esquirol (1828) pointed out that an idiot was incapable of acquiring the knowledge of a person of his own age under equally favorable external conditions. P. M. Duncan and W. Millard (1866) compared the "mental gifts" of the "feeble-minded" with "those of children of perfect mind at younger ages," while J. L. Down (1887), in order to arrive at a conception of the "mental condition" of the feeble-minded child, "put back the age" "in imagination" "two or more years." But in the case of an idiot "no amount of imaginary antedated age" corresponds to "the present condition of the child." The mental ratings made were, however, largely offhand and subjective, representing the personal opinion of the individual examiner, although it is likely that the mental status of the child was sometimes estimated in terms of the grade standard which he had reached in the school.

The Binet and group intelligence tests. Binet and Simon made a unique contribution to the methodology of ascertaining the degree of mental deficiency when they constructed an age scale of intelligence, which appeared in preliminary form in 1906,¹ and in improved revisions in 1908 and 1911. Numerous revisions and extensions of this scale have since appeared in rapid succession in many lands, and some form of the scale is now in general use in the schools, courts, or institutions in almost every civilized country. More recently group tests of intelligence, so-called, have appeared in great profusion, and have attained an enormous vogue as devices for securing a preliminary rating, or for grouping pupils in sections according to test results, or for making a rapid survey of the "intelligence level" of large groups of individuals.

¹ A brief scale by S. de Sanctis appeared the same year.

These tests will not be discussed in this volume. But a few advantages accruing from the use of the Binet-Simon scale, even with its admitted imperfections, may be pointed out.

Merits of the Binet scale as an instrument for classification.

(1) The tests are objective, are given under controlled and standardized conditions, and are supplied with age norms of serviceable, if not complete, accuracy. By means of the scale intelligence¹ can be measured much as height or weight is, although less accurately, of course. The tests help us to replace personal impression and opinion with an objective measure.

(2) Whether absolutely accurate or not, the scale enables us to attach a far more definite connotation to the various terms or categories in our classification of subnormals than was possible before its use. To say that an adolescent is an idiot with a two-year mentality or an imbecile with a four-year mentality by the Binet scale, is to employ a common, understandable language, because the words have a perfectly definite meaning. It is notorious that there was formerly little consistency or uniformity in the use of different categories in the classification of mental defectives. The terms idiot and imbecile were applied by different writers to the gravest as well as to the slightest grades of mental defectives. The Binet scale has helped to introduce order in our technical nomenclature.

(3) The Binet classification can be used to supplement and complete the classifications made from various other points of view; in fact all classifications are mutually supplementary and complementary. Every classification adds something new to our knowledge of an individual. Our knowledge of a macrocephalic or a hydrocephalic mental defective is rendered more complete if we know that the former is an imbecile with a four-year Binet age or an I.Q. of 30, and the other a moron with an eight-year Binet age or I.Q. of 50. The Binet rating is particularly valuable in connection with the educational and socio-industrial classifications which will be briefly discussed below.

IV. CLASSIFICATION ACCORDING TO EDUCABILITY

Present and potential proficiency. We should attempt to answer two questions regarding the child's educational status: (1) What is his accomplishment level or stage of advancement in the

¹ Intelligence in the sense of the traits and qualities measured by the tests contained in the scale itself, referred to as verbal intelligence by some writers.

various curricular branches at the time of the examination? (2) How much educability, or potential capacity for educational advancement, does he possess? To what extent can he be improved in the various literary branches, in the different forms of sensori-motor, industrial arts and vocational training, in physical development, in the formation of fixed, desirable and dependable habits of thought, feeling, action, social and moral response, application, efficient craftsmanship, and in the appreciation of ethical, civic, æsthetic and cultural ideals? To what extent can the child be trained to care for himself physically, mentally, socially, and morally, to support himself and to lead an independent existence in society?

Barr's classification. This, the best-known educational classification — aside from the Vineland, which will be considered in the next section — divides subnormals into four groups, with rather elaborate subgroupings. The best of the lowest grades ("idio-imbeciles") can only be trained to help themselves and to assist others to a limited extent, and require "asylum care" for life. The highest grades of the "moral imbeciles" are "trainable in manual and intellectual arts," but have a "genius for evil" and require "custodial life and perpetual guardianship." The high grade "imbeciles" possess similar educational possibilities, but require "long apprenticeship and colony life under protection," while the "backward and mentally feeble" are "trainable for a place in the world."

Value of educational classification. The educational classification, especially the determination of the child's degree of educability, is highly important from the practical viewpoint, for two reasons:

(1) The problem of the improvement or amelioration of nearly all the feeble-minded types, and of many backward children, is preëminently an educational rather than a medical problem, owing to the fact that feeble-mindedness is not an active disease process, subject to cure by medication or surgical interference (except possibly in a few rare types, such as the cretins, epileptics, syphilitics, or hydrocephalics, not all of which, however, respond to medical treatment). It is rather a defect, or a condition of arrested, imperfect, or damaged cerebral development which, although not eradicable, improves with growth and especially as the result of appropriate literary, moral, industrial, and hygienic training. The same predication may be made regarding a consid-

erable number of backward children. Indeed at the present moment special emphasis in the treatment and prevention of all types of mental disorders (psychoses) is being placed on the value of reëducation, occupational and social diversion, mental prophylaxis, the inculcation of right mental attitudes toward the problems of life, the establishment of healthy habits of thought, feeling, and response, the proper hygiene of the emotions and instincts — in a word on “mental hygiene.”

(2) It is highly important to know whether the child can be educated to assume a normal independent position in life, or whether he must occupy a subordinate or a dependent position and require control, supervision or custody. This knowledge is of more vital importance than the knowledge that the child is a microcephalic, or macrocephalic, or that the defect is environmental or hereditary. Information of the latter type is highly interesting but of secondary importance for the practical handling of mental defectives.

Limitations of the educational classification. (1) Educability depends on many other factors than innate “strength of mind,” “inherent capacity,” alertness, or “intelligence”; for example, such factors as interest, enthusiasm, ambition, effort, application, early training, age on entering school, regularity of attendance, the cultural advantages afforded by the habitat, memory (school tests used to place a premium on memory rather than on judgment or understanding), emotional drive and stability, health, and specific physical, mental or educational defects.

(2) Educability depends not only on the condition or capacity of the learner, but also on the skill of the teacher. Some failures in school have made normal progress when transferred to another teacher.

(3) The degree of educability, as determined by the school standards or the subject matter taught in school, is not always a reliable criterion for making predictions regarding the child’s ability to succeed in life.

(4) Children cannot be classified educationally until their degree of educability has been determined by actual trial, and this takes time. Sometimes a very considerable interval may elapse before the teacher is able to reach a positive decision.

Standardized achievement tests. Recently many standardized educational tests, or tests of educational attainment, achievement, or accomplishment, as they are frequently called, have been

devised, with standard grade scores or norms for practically all of the subjects taught in the elementary schools, and for many high school and college branches. A few sketchy composite scales of instruction have also appeared. But practically all of these tests and scales measure the educational level which the child has already reached as a result of prior instruction and not the potential ability or educability which he may possess in the various branches of study, although by repeating the tests at various intervals a measure may be obtained of the amount of progress made, which will furnish an indirect measure of the degree of educability. In the absence of any instruction whatever, none of the existing educational tests give a measure of the child's potential educational capacities. Such a measure is available to some extent in the Binet-Simon scale, performance in which correlates fairly closely with degree of educability especially in the literary subject-matter, and especially in the case of feeble-minded and very backward children. The intelligence examination is, at all events, more basic than the educational.

V. CLASSIFICATION ACCORDING TO SOCIO-INDUSTRIAL COMPETENCY

This type of classification, which does not differ sharply from the preceding, refers (a) to the speed with which the child is able to acquire various personal efficiencies, to appropriate and conform to the ordinary social obligations, activities, customs and conventions of life, to acquire dexterity in early childhood in the performance of the various chores and handicrafts of the home, and to acquire skill during adolescence in various trades or occupations; and (b) to the level of personal, social and occupational proficiency actually reached by the subject at the time of the examination.

Where socio-industrial efficiency may be observed. In the *home* can be observed the child's aptness to gain control over his powers and to acquire habits of self-help: to sit, walk, talk, control the fundamental reflexes, feed himself with spoon, fork and knife, wash himself, dress and undress, button and unbutton, to conform to the rules and regulations of the home, to run errands, and to perform the ordinary chores and tasks in and about the house or farm. Every parent should make and record observations on such developmental facts as these, but many neglect this important duty. Unfortunately, no very definite developmental

norms have as yet been established for many of these functions or activities. Perhaps most parents tend to estimate the "smartness" of their children by the brightness of the facial expression, by readiness to understand directions, ability to carry out errands properly, celerity of performance, quickness of reply, and emotional or temperamental make-up. Some parents are notoriously blind to defects in their own children, particularly if they are mild-mannered and well-behaved. A mother who brought a feeble-minded child from Illinois reported that she never suspected anything was wrong with him until she received a school report after his second year in the first grade. She had noticed nothing abnormal in his conduct at home, but a neighbor with whom I conferred saw that the child was "not right" at the age of three or four. It is surprising how frequently the question, "When did you first discover there was anything wrong with the child?" will evoke the reply from the mother: "not until he entered school." The tendency of some parents to blind themselves to defects in their own progeny may be a "defense reaction."

Again, on the *playground* children are unconsciously sized up by their fellows and peers, and unconsciously classify themselves by the way they seize the opportunities afforded to display initiative, leadership, courage, physical prowess, strength, quickness, intelligence, judgment, resourcefulness, honesty, fairness, and control of the emotions and disposition. The playground affords excellent opportunities for observing children's ability to coöperate, understand and execute directions, plan, originate, lead, execute, obey, conform to the rules of the game, subordinate individual interests, forget self in the interest of group success, and marshal all forces for the attainment of a definite goal in the possible face of tremendous odds. One of the great advantages of observing the playground activities is the opportunity afforded to study the child when he is interested, absorbed, dynamic, spontaneously active, that is, as G. Stanley Hall has remarked, "when he is most truly himself."

The playground estimates are valuable and often accurate, but far from infallible. By no means do all of those who display dominant personalities on the playground later ascend to positions of prominence in the trades or professions.

Finally, the *schools, fields, shops, marts, and offices* afford splendid opportunities for observing children's character traits, special

interests and talents, habits of industry, vocational ability, ability to understand instructions, follow directions, analyze situations, and plan solutions, and the power to acquire new motor habits and skills.

Competency standards. Tests and norms of personal, social and vocational competency have so far been only imperfectly developed. Brief reference was made to speech norms on p. 355. An unusual amount of study has been devoted recently to determining the optimum personal and environmental, or internal and external, conditions for efficient production and skilled workmanship, while the subject of vocational guidance and placement is receiving more and more attention. The following are the most significant of the various types of studies pursued.

Types of scientific studies. (1) The study of the relation of the "level of intelligence" to the degree of skill required in various occupations. Fig. 20 shows the distribution of the various intelligence ratings, based on the Army Alpha Test, obtained by various types of workers in the army. While there is a positive correlation between general intelligence, as determined by the Binet scale or the Army Alpha group test, and occupational or vocational efficiency, the correlation is found to be considerably lower than was formerly supposed to be the case. The writer has found a very wide range of intelligence quotients and intelligence categories in every economic group studied. Based on the teachers' estimates of the "degree of competency which . . . the pupils will probably show in making their living and taking care of themselves after leaving school," pupils who graded from merely backward to imbecile were found in every economic group. Pupils with an I.Q. as low as 36 were reported capable of self-support, while others with I.Q.'s up to 84 were reported totally dependent. The coefficient of correlation between the intelligence quotients and the salaries received by thirty-nine special school pupils soon after leaving school amounted to only .37. M. V. Cobb and R. M. Yerkes likewise found that the economic success of physicians did not correlate very closely with intelligence as based on the Army Alpha scores.

It is now believed that a child's industrial efficiency correlates more closely with the score obtained in a performance test, such as the various form-board, mechanical-ingenuity, and construction tests, or S. D. Porteus's maze tests, than in tests of verbal intelligence, such as the Binet or the Army Alpha.

(2) Motion and time studies (Frederick W. Taylor). These studies are based on the analysis of the motions made by the worker in the execution of different industrial operations, into

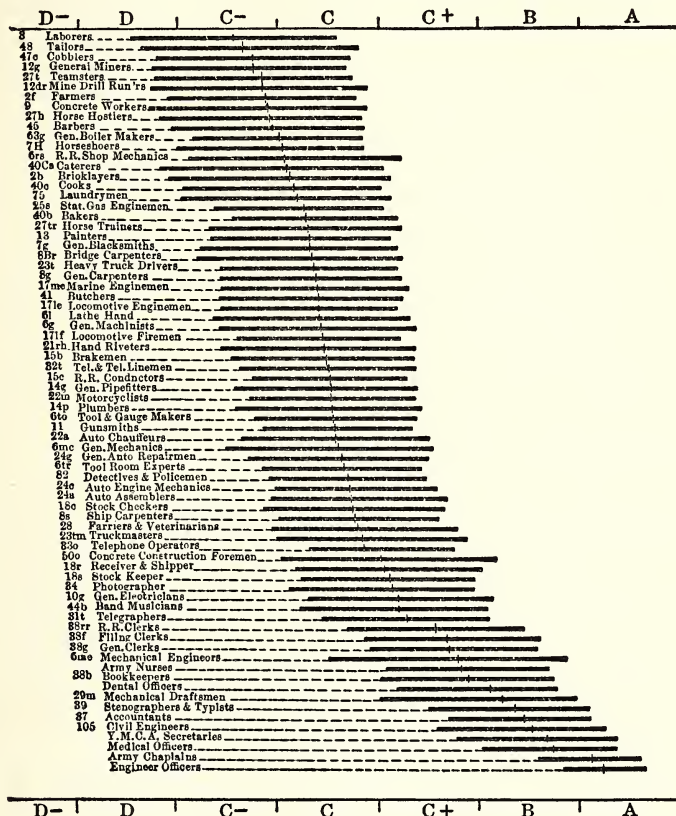


FIG. 20. OCCUPATIONAL INTELLIGENCE STANDARDS

Bar shows range of middle 50 per cent. The vertical cross bar shows position of median. Group A represents the most intelligent and group D— the least intelligent. The figure is based on data for approximately 36,500 men. Numbers at extreme left are key numbers of occupations. Data taken from soldiers' Qualification Cards.

their elements or cycles, the determination of the time required by the worker to perform each elementary movement and the

time required for pauses, and the recording of the path or orbit and the direction of the movement, to the end that a "standard time" for each unit and for the completed operation may be established, that useless, ill-directed and inefficient movements may be supplanted by efficient movements (for example, smooth, rhythmical, continuous movements), that fatigue may be reduced, that working capacity and output may be increased, and that the financial returns and contentment of the worker may be enhanced. The perfection of the methods of measurement and recording is largely due to the work of Frank B. Gilbreth. By means of the "chronocyclegraph" the path, length, direction and speed of the different movements made by the parts of the body employed in an industrial operation can be permanently recorded. The attachment of a regularly interrupted electrically driven tuning fork to the moving limb makes it possible to photograph on a moving film the direction and speed of the movement, the light spots being pointed on their forward ends. By using a double cinematograph and taking the picture stereoscopically (such a picture being called a stereocyclegraph), it is possible to exhibit continuous movements in three dimensions. Wire models, constructed to show the paths and directions of the motions, are used for aiding the learner to analyze the motions.

Increasing efficiency by eliminating useless movements. Gilbreth, as a result of his early time and motion studies, found that 13 of the 18 customary movements in bricklaying were superfluous, and that, supplied with standardized conditions, standardized operations, and adequate training, the output of the average bricklayer could be increased from 120 to 360 bricks per hour, without any material increase in the amount of physical exertion or fatigue. Similarly, the movements required in folding cotton were reduced from 20 or 30 to 10 or 12, while the output increased from 150 dozen to 400 dozen, without added fatigue. In an operation in molding the output was increased 165 per cent, the earnings 60 per cent, and the labor cost reduced 54 per cent. In making pillow cases, the output was increased 23 per cent and the earnings about 140 per cent, and the wage cost reduced about 50 per cent. A part of the increased efficiency is, however, due to a better arrangement of the tools and the physical surroundings.

(3) A considerable number of studies involving the analysis of different professions and trades (sometimes referred to as vocational analysis), of the specialties within the trades (occupational analysis), of the particular operation on a particular piece of

material on a particular machine (job analysis and job specification), and personnel specifications. In addition to describing the nature and conditions of the work, the tools, processes and operations used, the education, technical knowledge, experience, skill, physical strength, and sensory efficiency required by the workers, and their duties, remuneration, and terms of promotion, attempts have been made to draw up a list of psychological qualifications or traits needed in different occupations as determined either by the judgment of expert workers or by psychological tests of successful and unsuccessful employees. Little attempt has been made to scientifically analyze different occupations in terms of the work itself rather than in terms of extraneous tests. Especially significant are the "trade specifications" worked up by the Division of Personnel in the Army for 714 civilian trades and occupations, indicating the duties attached to each occupation, the qualifications needed by the candidate for appointment, and the types of occupational experience or training which may be substituted. The duties and qualifications of a "forging machine operator" are given as follows:

FORGING MACHINE OPERATOR

Duties

1. Operation of standard types and various kinds and sizes of forging machines, such as bulldozes and hydraulic presses on general work.

Qualifications

2. Should have thorough knowledge of rivet and bolt forging machines, screw, toggle and hydraulic presses for heading staybolts, forms, and all classes of press forgings of various materials.

Should have a practical knowledge of coal, gas, and oil types of forge furnace, and the proper heating of various materials for forgings.

Must be able to set and adjust dies and maintain same and be able to turn out uniformly dimensioned product.

Substitute Occupations

3. Drop forge operator, press operator, heavy forge blacksmith, blacksmith.

(4) Tests of proficiency or acquired skill, to determine whether applicants for appointment already possess trained skill for different jobs or occupations and, if so, the degree of skill possessed. The "army trade tests," constructed and standardized for 83 of the more essential trades before mobilization ceased, were of a threefold nature:

(a) *Verbal*, based on oral or written answers to oral or written questions regarding technical details of the trade in question.

(b) *Pictorial*, based on oral answers to oral questions concerning a given trade situation depicted in pictures, the naming of the tools, machines or parts of machinery shown, and designation of their uses. This form of test was devised to overcome language difficulties or to serve as a check on coaching.

(c) *Performance*, based on the actual execution of a typical job, requiring the use of the principal tools, from a blue print or printed directions.

On the basis of the results of these tests — the first or the second of which, curiously, proved far more valuable per unit of examination time than the actual performance test except in trades which were almost wholly matters of skill, such as stenography and automobile driving — the workman was graded as a novice, apprentice, journeyman, or expert. New tests of this type are constantly in the making. Thus, to measure general mechanical ability in school children J. L. Stenquist has devised a set of picture tests of "mechanical aptitude" in which the pupils pass judgments regarding the nature and functions of common mechanical devices or their parts, and a set of "assembling tests" in which the pupil must put together parts of common objects, such as locks, traps, or bells.

(5) Tests of trade capacity, potentiality or prediction, for ascertaining whether or not the individual possesses the physical and mental powers and capacities necessary for acquiring skill or achieving success in various occupations. Attempts have been made to determine the individual's "mental type," and the mental type needed for success in different occupations; to discover the trait, or combination of traits, which may be responsible for the success or failure of successful or unsuccessful persons ("trait analysis"); to classify jobs according to the predominant human qualifications needed for success in them; to construct and standardize objective psychological, psychophysical, medical and other tests which measure the amount which an individual may possess of the complex of underlying component

traits or capacities needed for acquiring proficiency in any particular job; and to express an individual's fitness for a particular job by means of a composite score, giving due consideration to the factors of intelligence, education, specialized training, special talents, physical capacity, etc. A beginning has been made in the construction of tests or composite scales for prospective typists, motormen (Münsterberg), telegraphers (L. L. Thurstone), clerical workers (E. A. Thorndike, W. D. Scott, H. C. Link, Thurstone, A. S. Otis), secretaries (A. T. Poffenberger), salesclerks (Elsie O. Brigman), salesmen (W. W. Charters), stenographers and comptometers (M. A. Bills, H. C. Link), musicians (C. E. Seashore), aviators (V. A. C. Henmon), bicycle-ball inspectors (S. E. Thompson), assemblers of gun parts (Link), etc.

(6) The industrial classification of the feeble-minded grouped according to Binet-Simon age. The Vineland classification, indicating the representative tasks which typical feeble-minded children under twenty in each Binet age were able to do in the Training School at Vineland according to the reports submitted by the attendants, teachers, and employees, is as follows, exclusive of Binet ages ten to twelve (which are based on few observations and on a level of ability which, in our judgment, is not predicative of feeble-mindedness):

VINELAND INDUSTRIAL CLASSIFICATION

BINET-SIMON		CLASSIFICATION	CAPACITIES
AGE			
Under 1	Low	Idiot	(a, Helpless. (b) Can walk. (c) Capable of voluntary regard. Feeds himself but eats everything. Eats discriminatingly.
1	Middle		
2	High		
3	Low	Imbecile	Plays a little but does no work. Tries to help. Does only the simplest tasks. Does tasks of short duration. Washes dishes. Does little errands in the house. Dusts.
4			
5	Middle		
6	High		
7			
8		Morons	Does errands and light work. Makes beds. Does heavier work. Scrubs. Mends. Lays bricks. Cares for bath-room.
9			

The writer made a similar, but more elaborate, study of epileptics of a wider range of ages in 1910-1911. The original data, which have never been compiled, are in the files of the New Jersey State Village for Epileptics.

No similar ratings have been made of mentally defective adults, either institutional or extra-institutional, but numerous recorded observations have revealed individuals at large who are not only law-abiding but supporting themselves and families as well, and yet who have intelligence levels by the Binet scale of only ten years, or even less.

(7) The study of the relation of emotional, temperamental, and instinctive traits, volitional disorders, character peculiarities, and psychotic tendencies to social, industrial, and economic success. In S. D. Porteus's social rating scale a numerical index of social sufficiency is derived from the weighted ratings given the feeble-minded subjects in certain defects of the personality, the defects most indicative of social maladaptability being lack of planning capacity, suggestibility, irresolution, impulsiveness, excitability, obstructiveness, and moodiness. Individuals with an index below 22 can get along in the community, while those from 36 to 44 require permanent custodial care and are not very trainable. Pugnacity, bad temper, disobedience, cunning, slyness and disrespect for authority had "no relation to estimated social sufficiency." The brightest children among the mental defectives were the most disobedient and troublesome.

Value of this classification. This type of classification is fundamental from the viewpoint of recommendations regarding the kind of training to be provided and the ultimate disposition to be made of the case. Ultimately we must face the question whether the child has sufficient capacity or acquired competency, general or special, to earn his living in some useful pursuit, and whether he can also exercise sufficient self-control to manage his own affairs with reasonable discretion, to assume an independent position in society, to assume social obligations, and to conform to the laws and conventions of society; or whether he is so defective intellectually, emotionally, volitionally and morally, and incompetent industrially, that he will always remain dependent and more or less irresponsible and possibly potentially or actually delinquent. We cannot wisely plan the child's course of training without attempting some sort of answer to these questions. The larger problem in the case of the feeble-minded is social — the

proper protection of society from the consequences of mental defect, the protection of the helpless and dependent from want and the irresponsible from the consequences of their folly or evil propensities, and the salvaging of all the assets possessed by defectives for productive, constructive work under custody, supervision, parole, or the liberties of citizenship. The basic criteria in the diagnosis of feeble-mindedness, on which the legal definition is framed, are psychological and sociological, as pointed out in Chapter III.

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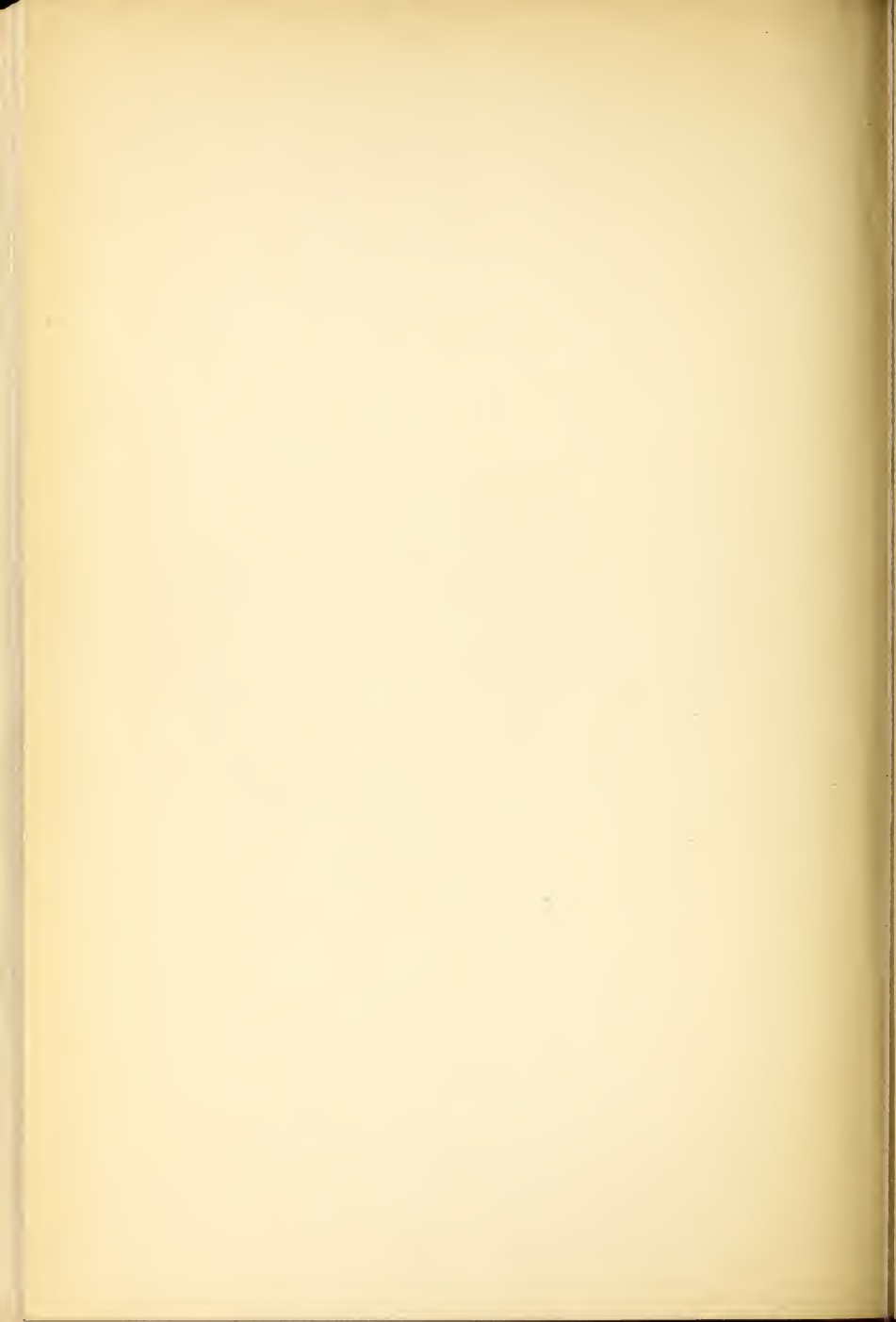
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